[LEED Process]

1:

What part of LEED Online can be used to obtain a real-time snapshot of the project's progress?

- **A.** The review comments
- **B.** The project timeline
- **C.** The credit assignments
- **D.** The project checklist

2:

A project that earns 65 points would earn what level of certification?

- **A.** Platinum
- **B.** Gold
- **C.** Silver
- **D.** Certified

3:

When there are two or more rating systems that might be applicable to a project, how should the project team decide which rating system to use?

- **A.** Choose the rating system that has the most regional priority credits
- **B.** Check with local code what rating system to use
- **C.** Use the 40/60 rule

- D. Choose the rating system that will result in the lowest certification costs

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4:

What are the roles of GBCI?

(Choose 3)

- A. Approving the LEED Rating Systems
- B. Overseeing LEED credential maintenance
- C. Promoting the triple bottom line
- D. Third-party technical reviews of registered LEED projects
- E. Auditing USGBC Member Companies
- F. Administration of the LEED exams

5:

What must a project do to earn LEED certification after selecting a rating system?

- A. Earn a minimum number of points only
- B. Satisfy relevant prerequisites for the selected rating system and earn a minimum number of points
- C. Satisfy all prerequisites for the selected rating system and earn a minimum number of points
- D. Pay the relevant fees and have a Green Rater approve the project

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6:

Which of the following statements regarding LEED Interpretations is NOT true?

- A. LEED interpretations are reviewed by LEED committees comprised of member-selected green building practitioners and USGBC staff.
- B. LEED interpretations can be applied to multiple projects.
- C. LEED interpretations are an opportunity to contribute to LEED in a significant way.
- D. LEED interpretations are used to add new requirements to the LEED Rating System.

7:

If a building has already earned LEED BD+C: New Construction certification what additional certifications could the building earn in the future?

(Choose 2)

- A. LEED BD+C: Core and Shell
- B. LEED ID+C: Commercial Interiors
- C. LEED for Neighborhood Development
- D. LEED O+M: Existing Buildings

8:

What is required of all new LEED buildings?

- A. Must have a minimum building height, have a daylighting strategy, and provide for occupant comfort

- **B.** Must have access to public transportation, manage rainwater, and have a FAR of at least 1.5
- **C.** Must have an ENERGY STAR score of 50, use sustainable building materials, and have preferred parking
- **D.** Must be a permanent structure, use a reasonable site boundary, and have a minimum floor area

---

9:

What is the point range for a project to earn LEED Gold?

- **A.** 60–79
- **B.** 70–79
- **C.** 60–69
- **D.** 50–59

10:

Which of the following must occur before a project team pursues a LEED Interpretation?

- **A.** A committee must review the request.
- **B.** The inquiry must first undergo the project CIR process.
- **C.** The project must earn a LEED certification.
- **D.** The project team must contact USGBC customer service.

11:

What are the roles of USGBC?

- A. Promoting the triple bottom line and administering the LEED exams
- B. Administering and creating the LEED rating systems and issuing LEED building certifications
- C. Overseeing LEED credential maintenance and third-party technical reviews of registered LEED projects
- D. Auditing member companies and providing building grants to for-profit companies

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12:

The point values of a credit are based on the credit's ability to:

(Choose 2)

- [ ] A. Be easily implemented
- [ ] B. Decrease building costs
- [ ] C. Promote beneficial effects
- [ ] D. Contribute to a higher certification level
- [ ] E. Mitigate the environmental harms of a building

13:

What LEED rating system helps create better, more sustainable, well-connected neighborhoods?

- A. LEED BD+C: Homes
- B. LEED O+M: Existing Buildings
- C. LEED BD+C: Schools
- D. LEED ND

14:

Which of the following are credit categories found in the LEED scorecard?

(Choose 3)

- A. Energy Performance
- B. Materials and Resources
- C. LEED AP
- D. Sustainable Sites
- E. Water Efficiency
- F. Indoor Air Quality

15:

How does USGBC support achievement of its mission 'to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible,

healthy, and prosperous environment that improves the quality of life'?

(Choose 2)

- [ ] **A.** Local chapters
- [ ] **B.** LEED green building program
- [ ] **C.** Financial incentives
- [ ] **D.** GBCI
- [ ] **E.** Free consulting

16:

What LEED credit category rewards projects within relatively dense areas, near diverse uses, with access to a variety of transportation options, or on sites with development constraints?

- ○ **A.** Location and Transportation
- ○ **B.** Smart Location and Linkage
- ○ **C.** Innovation
- ○ **D.** Sustainable Sites

17:

A declarant is the person on the project team who:

- ○ **A.** Assigns credits to each of the team members

- **B.** Is technically qualified to verify the information on the LEED credit forms and is authorized by the project administrator to sign the form
- **C.** Submits any Credit Interpretation Requests (CIRs) to GBCI
- **D.** Creates the project narrative

18:

Which of the following determines the level of certification a project earns?

- **A.** The rating system selected
- **B.** The number of points a project earns
- **C.** The size of the building
- **D.** The number of prerequisites attempted

19:

For a project to be LEED Platinum a minimum of how many points must be earned?

- **A.** 90
- **B.** 70
- **C.** 80
- **D.** 60

20:

Performance periods are part of which LEED rating system family?

- **A.** LEED BD+C
- **B.** LEED O+M
- **C.** LEED ND
- **D.** LEED ID+C

21:

What is one difference between LEED Interpretations and project CIRs?

- **A.** LEED interpretations are not published publically.
- **B.** LEED interpretations can only be used by the project that submitted them.
- **C.** LEED interpretations are precedent-setting.
- **D.** LEED interpretations are created by certification review teams.

22:

Which of the following is not a credit category for LEED for Neighborhood Development?

- **A.** Awareness and Education
- **B.** Neighborhood Pattern and Design
- **C.** Green Infrastructure and Buildings

D. Smart Location and Linkage

23:

Which of the following appropriately refers to LEED's system goals?

A. Prerequisites

B. Credits

C. Impact Categories

D. Prerequisites and Credits

24:

How many of the 110 possible LEED points can be earned for addressing regionally specific environmental issues?

A. 4

B. 2

C. 1

D. 10

25:

What best defines the project boundary?

A. Portion of the project site submitted for LEED certification

- **B.** Total area within the legal property boundaries of the site; this encompasses all areas of the site, including constructed and nonconstructed areas
- **C.** Platted property line of the project defining land and water within it
- **D.** Total area within the platted property line not including any non-constructed areas

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26:

To transform the way buildings and communities are designed, built, and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life' denotes which of the following:

- **A.** USGBC's vision
- **B.** USGBC's 2013-2015 strategic plan
- **C.** USGBC's mission
- **D.** The purpose of LEED Online

27:

Which of the following defines the types of buildings, spaces, and neighborhoods that the LEED rating system is designed to evaluate?

- **A.** LEED Online
- **B.** Credits
- **C.** Minimum Program Requirements
- **D.** Prerequisites

28:

What LEED rating system addresses exterior site maintenance programs?

- **A.** LEED BD+C: New Construction
- **B.** LEED O+M: Existing Buildings
- **C.** LEED BD+C: Core and Shell
- **D.** LEED BD+C: Schools

29:

What is the scope of the Protect and Restore Water Resources impact category?

- **A.** GHG Emissions Reduction by Embodied Energy of Water Reduction and GHG Emissions Reduction from Materials and Water Embodied Energy Use
- **B.** Water Quality Protection, GHG Emissions Reduction from Materials and Water Embodied Energy Use, and Protect, Enhance and Restore Biodiversity and Ecosystem Services
- **C.** Protection and Restoration of Water Regimes and Natural Hydrological Cycles and Local Biodiversity, Habitat Protection and Open Spaces
- **D.** Water Conservation, Water Quality Protection, and Protection and Restoration of Water Regimes and Natural Hydrological Cycles

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30:

The area of a project site that is used by the building structure, defined by the perimeter of the building plan is the:

- **A.** Development footprint

- B. Building footprint
- C. Building shell
- D. Building envelope

31:

In what instances would a project team submit a Credit Interpretation Request (CIR)?

(Choose 2)

- A. When appealing a credit that has been denied
- B. When a conflict in a credit or prerequisite requires resolution
- C. When the reference guide does not address a specific issue
- D. When the person registering the project has a question about the registration process

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32:

What should be used during all project phases to verify the green building goals are being met?

- A. Commissioning plan
- B. Materials checklist
- C. Sustainable purchasing policy
- D. LEED Project Checklist

33:

A member company wants to display its USGBC member logo. What would be an appropriate use for the USGBC member logo?

- **A.** On legal documents
- **B.** On company letterhead
- **C.** On a company's product to show product endorsement
- **D.** On any partner website of the member company

34:

Which of the following actions can NOT be performed by a project team member using LEED Online?

- **A.** Accessing web-based reference guides
- **B.** Managing public-facing project details
- **C.** Submitting technical inquiries regarding LEED credits
- **D.** Coordinating resources among project team members

35:

Some credits have an LPE option. What does LPE mean?

- **A.** That a credit is a LEED Pilot credit
- **B.** That the credit will pursue LEED Exemplary Performance
- **C.** That a LEED Accredited Professional is primarily responsible for the credit

D. That the credit has a Licensed Professional Exemption

36:

A LEED credit that supports local economies and strengthens the green building industry and supply chains supports what impact category?

A. Global Biodiversity, Habitat Protection and Land Preservation

B. Promote Sustainable and Regenerative Material Resources Cycles

C. Enhance Social Equity, Environmental Justice, Community Health and Quality of Life

D. Build a Greener Economy

37:

What is submitted to document that the requirements of a credit or prerequisite were met?

A. CIR

B. LEED credit form

C. LEED Project Checklist

D. Building operating plan

38:

Protecting human health globally and across the entire built environment life cycle is part of what impact category?

- A. Sustainable Use and Management of Ecosystem Services
- B. Enhance Individual Human Health and Well-Being
- C. Promote Innovation and Integration of Green Building Products and Services
- D. Create a Strong Sense of Place

39:

Which of the following helps reinforce the open consensus process of new LEED versions?

- A. The addition of new LEED adaptations
- B. The balloting process with USGBC membership
- C. The feedback projects receive from LEED credit reviewers
- D. Government oversight

40:

Who develops ongoing improvements to LEED?

- A. World Green Building Council (WGBC)
- B. USGBC Technical Advisory Groups (TAGs)
- C. USGBC member-based volunteer committees in conjunction with USGBC staff
- D. USGBC Board of Directors

41:

Which of the following are green building rating systems that exist in addition to LEED?

(Choose 3)

- [ ] **A.** Green Star
- [ ] **B.** Green Globes
- [ ] **C.** BREEAM
- [ ] **D.** ASHRAE
- [ ] **E.** WaterSense

42:

Grammatically, what language is the appropriate usage to describe a project that has been certified at any level?

- ○ **A.** LEED certification
- ○ **B.** LEED Certified
- ○ **C.** LEED-certified
- ○ **D.** LEED Certified certified

43:

What is true about a project that earns 38 points towards certification?

- ○ **A.** The project would be LEED Silver

- **B.** The project would be LEED certified
- **C.** The project would be LEED Certified
- **D.** The project would not earn certification
- **E.** The project would be LEEDs Certified

44:

What is the International Green Construction Code (IgCC) intended to replace?

- **A.** Traditional building codes
- **B.** ASHRAE 189.1
- **C.** LEED
- **D.** ENERGY STAR

45:

Where should a project team go for updates and errata for the LEED BD+C: New Construction rating system?

- **A.** LEED online
- **B.** usgbc.org
- **C.** GBCI.org
- **D.** LEED reference guides

46:

What is the intent of the Indoor Environmental Quality credits?

- A. Using reused materials inside the building envelope
- B. Reducing indoor potable water use
- C. Decreasing the lighting power density for interior lights
- D. Promote better indoor air quality and access to daylight and views

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47:

What are three important factors of the LEED Green Building Rating System?

(Choose 3)

- A. It is voluntary
- B. It is the only green building standard
- C. It is consensus-based
- D. It is market-driven
- E. It is government-financed

48:

An office has a small pantry with a kitchen sink. The sink is used to wash dishes by hand and fill coffee pots. What is the type of water called that comes out of the kitchen faucet?

- A. Potable water

- B. Non-potable water
- C. Gray water
- D. Black water
- E. Process water

49:

What best defines the property area?

- A. Platted property line of the project defining land and water within it
- B. Portion of the project site submitted for LEED certification
- C. Total area within the legal property boundaries of the site; it encompasses all areas of the site, including constructed and non-constructed areas
- D. Total area within the platted property line not including any non-constructed areas

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50:

What describes a project that has been certified to the base level?

- A. LEED Certified certified
- B. LEED Accredited
- C. LEED's Certified
- D. LEED Certified

51:

Who is responsible for ensuring the use of the consensus process to evolve LEED in accordance with the mission, guiding principles, and strategic plan of USGBC?

- A. LEED Technical Committee
- B. LEED Steering Committee
- C. LEED Board of Directors
- D. LEED Technical Advisory Groups

52:

Which of the following are LEED impact categories?

- A. Build a Greener Economy and Protect and Restore Water Resources
- B. Reuse Dependence on Fossil Fuels and Create a Strong Sense of Place
- C. Natural Context, Infrastructural Context, and Social Context
- D. Social Capital, Natural Capital, and Economic Capital

53:

What are the basic types of LEED improvements that are updated through revisions on a regular development cycle?

(Choose 3)

- A. Adaptations

- [ ] **B.** LEED reviewer comments
- [ ] **C.** Next version of LEED
- [ ] **D.** Credit interpretation requests
- [ ] **E.** Errata and Addenda
- [ ] **F.** LEED technical requests

54:

What is the exterior surface of the building referred to as?

- ○ **A.** Building density
- ○ **B.** Floor area ratio
- ○ **C.** Building footprint
- ○ **D.** Envelope

55:

LEED requires which of the following to be done in order for a project to earn certification?

(Choose 2)

- [ ] **A.** Achieve all prerequisites for the rating system
- [ ] **B.** Have the project administrator be a LEED AP
- [ ] **C.** Include a LEED AP on the project
- [ ] **D.** Meet the Minimum Program Requirements

- [ ] **E.** Achieve at least 50 points

56:

Promoting the triple bottom line is a part of USGBC's:

- **A.** Vision
- **B.** Guiding principles
- **C.** Strategic goals
- **D.** Mission

57:

The LEED Green Building Rating System is all of the following EXCEPT:

- **A.** Voluntary
- **B.** Privately funded
- **C.** Consensus-based
- **D.** Market-driven

58:

Each LEED credit and prerequisite includes the intent of the credit/prerequisite. What is the 'intent' of a credit/prerequisite?

- **A.** Outlines concerns specific to specific regions

- **B.** Details the level of performance needed to achieve a credit
- **C.** Identifies the main sustainability goal or benefit of the prerequisite or credit
- **D.** Addresses the synergies and trade-offs between credits

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59:

What are the key criteria that define green building performance?

- **A.** Prerequisites
- **B.** Innovative designs
- **C.** Minimum program requirements
- **D.** Third party standards

60:

What additional LEED certification would a project team likely pursue for an office building that has already earned LEED BD+C: Core and Shell if the offices will be leased out to tenants?

- **A.** LEED BD+C: Homes
- **B.** LEED BD+C: Core and Shell post-certification
- **C.** LEED ID+C: Commercial Interiors
- **D.** LEED BD+C: New Construction

61:

What is the minimum certification level in LEED?

- A. Certified
- B. Accredited
- C. Approved
- D. certified

62:

What does LEED stand for?

- A. Leadership in Energy Efficient Design
- B. Leadership in Energy and Efficient Design
- C. Leadership in Environmental Efficient Design
- D. Leadership in Energy and Environmental Design

63:

What LEED credit category encourages strategies that minimize the impact on ecosystems and water resources?

- A. Location and Transportation
- B. Regional Priority
- C. Water Efficiency

D. Sustainable Sites

64:

Which of the following are enforceable within the building industry?

A. International Green Construction Code (IgCC)

B. Quality of views

C. Acoustic design

D. Material sourcing

65:

Which of the following impact categories is given the greatest weight in LEED?

A. Promote Sustainable and Regenerative Material Resources Cycles

B. Protect, Enhance and Restore Biodiversity and Ecosystem Services

C. Protect and Restore Water Resources

D. Enhance Individual Human Health and Well-Being

E. Build a Greener Economy

F. Reverse Contribution to Global Climate Change

66:

Which LEED rating system has pre-certification?

- **A.** LEED BD+C: New Construction
- **B.** LEED O+M: Existing Buildings
- **C.** LEED BD+C: Core and Shell
- **D.** LEED BD+C: Schools
- **E.** LEED ID+C: Commercial Interiors

67:

For which of the following would a LEED Green Associate use the Green Building Information Gateway (GBIG)?

- **A.** Issuing a press release to the green building community
- **B.** Communicating with local USGBC chapters to obtain project assistance
- **C.** Exploring and comparing the green dimensions of the built environment
- **D.** Updating a project's public information

68:

What impact category addresses reducing negative environmental impacts throughout the materials life-cycle?

- **A.** GHG Emissions Reduction from Materials and Water Embodied Energy Use
- **B.** Protect, Enhance and Restore Biodiversity and Ecosystem Services
- **C.** Reverse Contribution to Global Climate Change

D. Promote Sustainable and Regenerative Material Resources Cycles

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69:

Credit Interpretation Requests (CIRs) are most likely used for what part of the LEED process?

A. Communicating with the project administrator and/or project team

B. Addenda and updates to the LEED Rating Systems

C. Appeal of denied credits

D. Technical guidance for LEED credits

70:

A new building tenant is leasing 2-stories in an existing 10-story building. What rating system would be appropriate for the project?

A. LEED Interior Design and Construction: Commercial Interiors

B. LEED Building Design and Construction: Core and Shell

C. LEED Operations and Maintenance: Existing Buildings

D. LEED Building Design and Construction: New Construction

71:

What is the proper designation for a project that has earned 80 points and met all prerequisites?

A. LEED Platinum

B. LEED Gold

C. LEED Certified Gold

D. LEED Certified Platinum

72:

Which of the following LEED rating systems would the project team of a planned new three-story apartment building choose?

A. LEED ND: Plan

B. LEED BD+C: Multifamily Midrise

C. The LEED Homes rating system that corresponds to the ENERGY STAR program in which they are participating.

D. LEED BD+C: New Construction and Major Renovations

73:

What is the purpose of the LEED Pilot Credit Library?

A. To manage the LEED documentation process

B. To provide extensions of existing rating systems to address specific types of spaces or requirements for international projects

C. To allow credits to be refined through LEED project evaluations before they complete the balloting process for introduction into LEED

D. Provide precedent-setting rulings reviewed by USGBC on formal inquiries submitted by LEED project teams that can be applied to multiple projects.

74:

Which of the following is NOT a minimum program requirement (MPR)?

- **A.** Compliance with project size requirements
- **B.** Permanent location on existing land
- **C.** Reasonable LEED boundaries
- **D.** Commitment to sharing whole-building energy and water usage data

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75:

What tool is used to determine the target certification level?

- **A.** LEED Online
- **B.** LEED Scorecard
- **C.** CIR
- **D.** EPA's Target Finder

76:

How does LEED evaluate the environmental performance of a building?

- **A.** Through a cradle to grave analysis
- **B.** By the amount of energy reduction
- **C.** Using LEED Online

D. From a whole building perspective over a building's life cycle

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77:

The total land area of a project site covered by buildings, streets, parking areas, and other typically impermeable surfaces constructed as part of the project is the:

A. LEED neighborhood

B. Restored area

C. Stormwater retention area

D. Development footprint

78:

What does the LEED Volume Program help with?

A. Comparing design case energy use among buildings

B. Cost-effective LEED certification on a volume scale

C. Policy support for LEED documentation

D. Comparing baseline energy use among buildings

79:

A project team is shrinking the building footprint to increase the amount of open space on a project. What impact category does this design decision support?

- A. Protection and Restoration of Water Regimes and Natural Hydrological Cycles
- B. Protect, Enhance and Restore Biodiversity and Ecosystem Services
- C. Protect Human Health from Direct Exposure to Negative Health Impacts
- D. Provide Affordable, Equitable and Resilient Communities

80:

What is the point range for a project to earn LEED Silver?

- A. 60-69
- B. 40-49
- C. 70-79
- D. 50-59

81:

What factor impacts the cost of earning LEED-certification?

- A. The type of land the building was built on
- B. The number of Full Time Equivalents (FTEs) that will occupy the finished building
- C. The number of stories the building has
- D. Square footage of the building

82:

Which of the following documents establishes the terms and conditions of the LEED Certification Program to which the building owner is bound?

- **A.** Agent's authority
- **B.** Owner's project requirements
- **C.** LEED certification
- **D.** Certification agreement

83:

What components are included in the impact category for Reverse Contribution to Global Climate Change?

- **A.** GHG Emissions Reduction from Materials and Water Embodied Energy Use and Water Quality Protection
- **B.** GHG Emissions Reduction from a Cleaner Energy Supply and Protect Human Health from Direct Exposure to Negative Health Impacts
- **C.** GHG Emissions Reduction from Materials and Water Embodied Energy Use and Move to Cyclical, Non-Depleting Material Cycles
- **D.** GHG Emissions Reduction from Building Operations Energy Use and GHG Emissions Reduction from a Cleaner Energy Supply

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84:

An architect is designing a mixed use building that will have retail space on the lower floors and residential condominiums on the upper floors. The building will also include space for a pre-

kindergarten learning facility. What LEED rating system would be most appropriate?

- A. LEED BD+C: Retail
- B. LEED BD+C: Schools
- C. LEED BD+C: New Construction
- D. LEED ID+C: Commercial Interiors

85:

What impact category most directly helps with the people aspect of the triple bottom line?

- A. Protect, enhance, and restore biodiversity and ecosystem services
- B. Enhance social equity, environmental justice, and community quality of life
- C. Protect and restore water resources
- D. Promote sustainable and regenerative material resources cycles

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86:

Which of the following is an alternative compliance path to the International Green Construction Code (IgCC)?

- A. ASHRAE 90.1
- B. ASHRAE 189.1
- C. LEED

D. BREEAM

87:

Which of the following instances of documentation is an acceptable form when the name of the organization is appearing in a press release for the first time?

A. U.S. Green Building Council

B. U.S.G.B.C.

C. U.S. GBC

D. United States Green Building Council

88:

What is the maximum number of project administrators that can be assigned to a LEED project?

A. Unlimited

B. 3

C. 2

D. 1

89:

Which of the following impact categories are given the greatest weight in LEED?

A. Build a Greener Economy and Enhance Social Equity, Environmental Justice, Community

Health and Quality of Life

- **B.** Promote Sustainable and Regenerative Material Resources Cycles and Reverse Contribution to Global Climate Change
- **C.** Reverse Contribution to Global Climate Change and Enhance Individual Human Health and Well-Being
- **D.** Protect and Restore Water Resources and Protect, Enhance and Restore Biodiversity and Ecosystem Services

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90:

Exemplary performance and pilot credits are awarded in what LEED category?

- **A.** Awareness and education
- **B.** Core and Shell
- **C.** Innovation
- **D.** Sustainable Sites

91:

What is USGBC's vision?

- **A.** Transform the way buildings and communities are designed, built, and operated
- **B.** See the transformation of a built environment that leads to a sustainable future
- **C.** Buildings and communities that will regenerate and sustain the health and vitality of all life within a generation
- **D.** Lead and accelerate the transformation to high-performing, healthy green buildings,

homes, and communities throughout the United States

92:

What rating system has a credit category named Smart Location and Linkage?

- A. LEED ID+C
- B. LEED O+M
- C. LEED BD+C
- D. LEED ND

93:

Which of the following are mandatory for LEED certification?

(Choose 2)

- A. Meeting the Minimum Program Requirements
- B. Meeting all prerequisites
- C. Earning at least 50 points
- D. Having a LEED AP on the project
- E. Earning Innovation points
- F. Achieving all Regional Priority credits

94:

How are LEED credits that significantly contribute to accomplishing the system goals of the seven impact categories given more emphasis?

- **A.** The requirements are easier to achieve
- **B.** The have more options to meet the requirements
- **C.** They can earn more points
- **D.** They contain third party standards

95:

If an error is found in the LEED rating system, which of the following would USGBC use to address the error?

- **A.** LEED Interpretations
- **B.** LEED Addenda
- **C.** Consensus-based review
- **D.** Project CIR process

96:

Which of the following is NOT a component of the impact category Enhance Social Equity, Environmental Justice, Community Health and Quality of Life?

- **A.** Promote Access to Neighborhood Completeness Resources

- **B.** Support Occupant Comfort and Well-Being
- **C.** Provide Affordable, Equitable and Resilient Communities
- **D.** Create a Strong Sense of Place
- **E.** Promote Human Rights and Environmental Justice

97:

A telecom company is building a new ten-story office and data center. The office space will be on the top seven floors and the data center on the first three floors. Which of the following rating system would be best suited for the project?

- **A.** LEED BD+C: Warehouses and Distribution Centers
- **B.** LEED BD+C: Core and Shell
- **C.** LEED BD+C: Data Centers
- **D.** LEED BD+C: New Construction

98:

A hamburger franchise is planning on building thirty new restaurants across the country in the next two years. Each restaurant is based on the same prototype. How should the multiple buildings be certified?

- **A.** Using the LEED Volume Program
- **B.** As a LEED for Neighborhood Development project
- **C.** By registering each project individually with LEED Online

D. Using the LEED Campus Program

99:

A university client asks about certifying multiple buildings. Which of the following is an appropriate response?

A. The LEED Volume Program is always used for certifying more than one building.

B. The Campus Program is used for certifying multiple buildings if they are adjacent to each other.

C. The Neighborhood Development rating system would be used to streamline the documentation process.

D. The Campus Program can be used for projects not necessarily uniform in design or operations but located on a single campus location.

100:

What statement is true regarding the LEED Scorecard?

A. The LEED Scorecard is organized by LEED category

B. The LEED Scorecard gives the project team the option of not earning prerequisites

C. Innovation credits are not listed in the LEED Scorecard

D. There is one LEED Scorecard that can be used for any rating system

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101:

What term refers to a mandatory project characteristic, measurement, quality, value or function as identified within the LEED rating system?

- A. Prerequisite
- B. Minimum Program Requirement
- C. Exemplary performance
- D. Credit

102:

What is each LEED rating system made up of?

- A. 3rd party standards
- B. Interpretations
- C. Impact categories
- D. A combination of credit categories

103:

What are the goals of the Minimum Program Requirements?

(Choose 3)

- [ ] A. Protect the integrity of the LEED program
- [ ] B. Verify buildings are meeting environmental goals

- [ ] **C.** Ensure prerequisites are met
- [ ] **D.** Give clear guidance to customers
- [ ] **E.** Reduce certification process challenges

104:

What LEED developments address specific space types and international requirements?

- ○ **A.** LEED Pilot Credit Library
- ○ **B.** LEED Rating System adaptations
- ○ **C.** LEED credit weightings
- ○ **D.** Next version LEED

105:

How are the number of points a credit can earn in LEED determined?

- ○ **A.** The points are set by how difficult the credit is to achieve.
- ○ **B.** The points are assigned by the GHG emissions related to the credit.
- ○ **C.** Each credit is independently evaluated by USGBC within the seven impact categories.
- ○ **D.** Member companies vote on which credits should receive the most points.

106:

At a minimum, a project team must successfully do which of the following to obtain LEED certification?

(Choose 2)

- [ ] **A.** Gather documentation for 40 points of the 110 points available
- [ ] **B.** Record all vendors used on the project
- [ ] **C.** Hire a LEED AP
- [ ] **D.** Gather documentation for the prerequisites

107:

A multi-family building that is 3 stories tall would be certified under what rating system?

- ○ **A.** LEED BD+C: Multifamily Midrise
- ○ **B.** LEED ID+C: Commercial Interiors
- ○ **C.** LEED BD+C: Homes
- ○ **D.** LEED BD+C: New Construction

108:

A building owner's project includes a major HVAC renovation, significant envelope modifications, and core plumbing renovation. An interior fit-out is not part of the project. What LEED rating system would be most appropriate for this project?

- **A.** LEED ID+C: Commercial Interiors
- **B.** LEED O+M: Existing Buildings
- **C.** LEED BD+C: New Construction
- **D.** LEED BD+C: Core and Shell

[Integrative Strategies]

1:

The process of green building begins with the idea of the project and continues until:

- **A.** The construction documents are prepared
- **B.** The schematic design is completed
- **C.** The project begins operating
- **D.** The project is reused or recycled

2:

What is a stakeholder meeting?

- **A.** A meeting where engineers work together to discover new synergies
- **B.** A meeting where research is conducted about materials
- **C.** An intense workshop to solve a problem or plan the design of something that includes the project team and stakeholders
- **D.** A meeting with everyone that has a vested interest in the outcome of a project

---

3:

What standard applies to natural ventilation?

- **A.** ASHRAE 62.1
- **B.** Green-e
- **C.** SMACNA

- D. ASHRAE 55

4:

What is NOT true about a closed system in the built environment?

- A. All aspects of a closed ecosystem are highly integrated to ensure maximum efficiency
- B. Used resources are released outside the system
- C. There is no waste
- D. Materials in a closed system are used for other purposes at the end of their useful life

---

5:

By identifying synergies between systems during the integrative process, teams will save time and money in both the short and the long term while optimizing resource usage. Which of the following are also true of the integrative process?

(Choose 2)

- A. The integrative process can avoid delays and costs resulting from design changes during the Construction Documents phase.
- B. The integrative process is based on an ISO standard.
- C. The integrative process reduces change orders during construction.
- D. The integrative process increases the amount of construction time for a project.

6:

Which of the following aid in the identification of sensitive habitats?

(Choose 2)

- [ ] **A.** The U.S. Fish and Wildlife Service
- [ ] **B.** The NatureServe Heritage Program
- [ ] **C.** The U.S. Code of Federal Regulations
- [ ] **D.** FEMA

7:

SMACNA guidelines should be followed for what reason?

- ○ **A.** To develop a green cleaning program
- ○ **B.** To select carpets with low VOCs
- ○ **C.** To minimize indoor air quality issues caused by construction
- ○ **D.** To establish an integrated pest management plan

8:

What standard can assist project teams with engaging in a comprehensive integrative process?

- ○ **A.** Integrative Process (IP) ANSI Consensus National Standard Guide 2.0 for Design and Construction of Sustainable Buildings and Communities
- ○ **B.** I-Codes

C. ENERGY STAR

D. ICC

9:

What stakeholders help the project team understand the local context, culture, and history of a project site?

A. Resale company

B. Cleaning contractor

C. Architect

D. Local residents

10:

The design charrette is at least one full-day workshop to integrate green strategies _____:

A. across all aspects of the building design.

B. in the mechanical and plumbing systems of the building.

C. and to review contractor bids.

D. and to review product vendors.

11:

What is at the core of the integrative process?

- A. Working toward individual goals
- B. Cost-based decision making
- C. Linear planning
- D. Collaborative team members

12:

Which of the following assess environmental performance of products and services and provide guidance on improving their environmental performance?

- A. ISO 14000
- B. IESNA
- C. ASHRAE
- D. LEED

13:

What is an example of a project team applying systems thinking and integrative process?

- A. Ending the green building process when the project team hands the site over to the owner
- B. One team member completing the design of a system and handing it off to the next team member
- C. Focusing on the first costs of a particular wood flooring
- D. Establishing water saving metrics for measuring success

14:

A building owner in a hot climate wants to include a green roof for insulation and an air-tight building for energy efficiency. During the integrative process what would need to be discussed as part of this strategy?

- **A.** Bringing in additional fresh air for indoor air quality
- **B.** The green roof will increase the heat island effect
- **C.** Acoustic performance will be poor
- **D.** If the building has extensive glazing cooling loads will increase

---

15:

For international projects aiming to achieve indoor water reductions, which of the following standards should be followed if WaterSense labeled fixtures are not available?

- **A.** A local equivalent
- **B.** I-Codes
- **C.** Green-e
- **D.** ASHRAE

16:

LEED credit forms must be signed by which person?

- **A.** Declarant

- B. Project manager
- C. Project owner
- D. Local code official

17:

What standard might need to be used to measure building energy performance?

- A. Green-e
- B. ASHRAE 90.1
- C. SMACNA
- D. ISO 14020

18:

LEED projects located outside of the United States may use green cleaning products that adhere to which of the following standards?

- A. EN 15251:2007
- B. Green Label Plus
- C. Global Ecolabeling Network
- D. SMACNA

19:

What does ASHRAE 62.1 specify?

- A. Thermal comfort
- B. Indoor air quality
- C. Energy performance
- D. Commuting surveys

20:

A developer is reviewing potential sites for a new office building in an urban area. What is one of the first steps towards LEED certification?

- A. Setting construction material quantities
- B. Assigning roles and responsibilities
- C. Convening a goal-setting workshop
- D. Discuss overlapping benefits

21:

The Green Label Plus certification is used for what material?

- A. Wood
- B. Cleaning products
- C. Floors

- **D.** Carpets

22:

Products that meet ISO 14000 standards are:

- **A.** FSC certified
- **B.** Environmentally preferable
- **C.** Mercury-free
- **D.** Pre-approved products for LEED

23:

What can be used to compare the energy performance of two buildings?

- **A.** LEED Online
- **B.** Green-e
- **C.** LEED
- **D.** ENERGY STAR

24:

In LEED BD+C: Homes which standard is used to measure minimum energy performance?

- **A.** I-Codes

- B. ENERGY STAR for Homes
- C. ASHRAE 62.1
- D. ASHRAE 90.1

25:

What steps would be included in the pre-design phase of a green building project?

(Choose 2)

- A. Develop, test, and select green systems
- B. Develop a project schedule
- C. Review laws and standards
- D. Review material's test data

26:

Success in LEED and green building design is best accomplished through an integrative design process that prioritizes which of the following:

- A. Each practitioner designing subassemblies and system components for the most benefit and the least cost
- B. Cost-effectiveness over both the short and long term
- C. Rapid design schedules
- D. Limiting the disciplines of the project team to those members who are available most frequently

27:

Which of the following is one of the tasks that integrative project team members complete together?

- A. Identifying opportunities for synergy
- B. Select a target certification level
- C. Energy modeling
- D. Applying for financing

28:

An architectural firm is meeting with a building owner that has never done a LEED project before. What are some of the obstacles the firm may encounter with the owner?

(Choose 2)

- A. The additional time for the integrative process
- B. The substantial cost increases the project will incur
- C. Convincing the owner to limit their involvement in the process
- D. The use of new technologies
- E. The extended construction schedule

29:

What promotes reaching across disciplines to incorporate diverse team members during the pre-design period?

- A. Integrative process
- B. Innovation
- C. Prerequisites
- D. Minimum program requirements

30:

What type of products would carry a Green Seal label?

- A. Wood
- B. Brick
- C. Paints
- D. Carpet

31:

What intense workshop is used to establish green building goals across all aspects of the building design, drawing on the expertise of all participants?

- A. LEED roundtable
- B. Technical Advisory Group meeting
- C. Charrette
- D. Facility manager meeting

32:

What is true about an integrative process?

- A. The integrative process is a linear process
- B. The integrative process results in longer construction schedules
- C. The integrative process is applicable to any phase in the life cycle of a building or land-use project
- D. The integrative process is only used for new construction design processes

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33:

What is the primary benefit of an integrative process?

- A. Maximizing opportunities for integrative, cost-effective adoption of green design and construction strategies
- B. Reducing costs over traditional construction practices
- C. Obtaining local, state, and federal incentives for green design and construction strategies
- D. Achieving the highest LEED rating possible

34:

Which integrative project team members bring the most experience to the Discovery phase regarding post-occupancy behavior?

- A. Architects

- **B.** HVAC engineers
- **C.** Building owners
- **D.** Facility managers

35:

What is the primary reason that a LEED project can have higher development costs compared to conventional development?

- **A.** Team members worked together instead of separately
- **B.** Material costs rose
- **C.** Green building goals were not set in the pre-design phase
- **D.** New, green building technologies were used

36:

Green Seal and Environmental Choice are third party standards for what products?

- **A.** Electronic equipment
- **B.** Furniture
- **C.** Cleaning products
- **D.** Flooring

37:

What is an example of systems thinking?

- A. Installation of a parking lot
- B. Considering how occupants will get to the project building
- C. Commissioning of the exterior lights
- D. Reviewing the schedule for the timing of the HVAC system installation

---

38:

Which of the following are phases of a LEED integrative process?

(Choose 3)

- A. Financing
- B. Design and Construction (Implementation)
- C. Value Engineering
- D. Discovery
- E. Occupancy, Operations, and Performance Feedback

39:

Which of the following identifies the biggest difference in the integrative process compared to a conventional building process?

- A. The integrative process is iterative.

B. The integrative process includes a schematic design phase.

C. The integrative process has a completion date.

D. The integrative process involves all project team members.

40:

When would a project team member use the HERS Index?

A. When determining the minimum energy performance of a two-story residential project

B. During the Discovery phase of water-related systems

C. When measuring the amount of rainfall on a site

D. When calculating the minimum indoor air quality of a warehouse

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41:

What statement is true regarding the evaluation process if a project team is considering a new technology to bring more sunlight into a building?

A. Further evaluation is not necessary if new information becomes available

B. If it is a proven technology, alternatives do not need to be considered

C. Adequate time for research and testing will be needed for evaluation

D. The technology does not need to be evaluated in relation to other systems

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42:

What major concepts are integral to green building and sustainability?

(Choose 3)

- [ ] **A.** Open systems
- [ ] **B.** Integrative process
- [ ] **C.** Life cycle approach
- [ ] **D.** Systems thinking
- [ ] **E.** Linear planning and design processes

43:

What is the purpose of having a LEED AP on a project?

- ○ **A.** For building commissioning
- ○ **B.** To serve as the project administrator
- ○ **C.** To submit all project data
- ○ **D.** To streamline the LEED process

44:

As part of the integrative process, which of the following team members would be the most important for providing information about how the building will be used?

- ○ **A.** Facility managers

- **B.** Architects
- **C.** Building users
- **D.** Building owners

45:

Who should be present at a project's goal-setting workshop?

- **A.** All principal project team members
- **B.** The owner and users only
- **C.** The owner, architect, and engineers only
- **D.** The owner and architect only

46:

What type of system is more sustainable?

- **A.** Neutral system
- **B.** Open system
- **C.** Dynamic system
- **D.** Closed system

47:

What is an example of a negative feedback loop?

- **A.** Increased heat islands require more mechanical cooling which generates more greenhouse gas emissions causing the need for more cooling
- **B.** A warmer atmosphere melts more ice, changing the Earth's albedo which further warms the atmosphere
- **C.** Warming oceans releasing greenhouse gasses which would warm the ocean even more
- **D.** A thermostat whose temperature feedback indicates to the system when to turn off

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48:

What statement is true regarding a facility manager?

- **A.** A facility manager would not be part of an integrative project team
- **B.** The facility manager has sole responsibility for designing a building recycling plan
- **C.** A facility manager would be most involved in the ongoing operations and maintenance of a building
- **D.** A facility manager that is a LEED AP could not earn a project an Innovation point

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49:

What is NOT a principle that should be followed for a successful green building project?

- **A.** Multidisciplinary approach
- **B.** Budgeting the planning and design costs separately from the operations costs

- C. Looking at long term savings
- D. Committing to green building early in the process
- E. Commitment to the process through the life of the project

---

50:

Which of the following best describes systems thinking?

- A. A Sustainable plan for built environments that improve existing conditions.
- B. An understanding of the built environment as a series of relationships in which all parts influence many other parts.
- C. A formal review process of the design of a project based on its intended function in order to identify potential alternatives that reduce costs and improve performance.
- D. An approach to design and operations that brings team members together to work collaboratively on all of the project's systems, finding synergistic solutions that support greater levels of sustainability.

51:

What would be the result of specifying more costly, high-performance windows during the Construction phase?

- A. Increased building costs
- B. Decreased overall project costs
- C. Inexpensive downsizing of the HVAC system
- D. Less energy consumed by the building

52:

What stakeholders would likely be involved in a building operations project?

- **A.** Community representatives
- **B.** Cleaning contractors
- **C.** Local residents
- **D.** Architect

53:

What has the greatest long-term impact on building performance and on the environment?

- **A.** The use of recycled materials
- **B.** Water use
- **C.** Purchase of green power
- **D.** Site selection

54:

Which of the following best describes the LEED charrette?

- **A.** Meetings with the project team at least monthly to review project status, introduce new team members to project goals, discuss problems, formulate solutions, review responsibilities, and identify next steps.
- **B.** An intensive, multiparty workshop that brings people from different disciplines and backgrounds together to produce specific deliverables

- **C.** At least eight hours of training (extending a full day or over several days) on the green aspects of the project, as well as ways in which the trades can contribute to achieving each LEED prerequisite and attempted credits

- **D.** The operational hand-off between the project team and the facility manager and building occupants during which the control of systems is reviewed

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55:

What does ASHRAE 55 specify?

- **A.** Thermal comfort

- **B.** Indoor air quality

- **C.** Energy performance

- **D.** Commuting surveys

[Location and Transportation]

1:

What encourages the purchase and use of green vehicles?

- A. Locating the project in a dense neighborhood
- B. Designing the project to be mixed-use
- C. Providing preferred parking for those vehicles
- D. Providing solar car ports

2:

What site selection would promote walkability and reduce vehicle distance traveled?

- A. A site near a solar garden
- B. A site near public parking
- C. A site with pedestrian access between diverse uses
- D. A site near mass transit

3:

Developments located within walking distance of diverse uses reduce:

(Choose 2)

- [ ] A. Sedimentation of nearby water bodies
- [ ] B. Water use

- [ ] **C.** Greenhouse gas emissions
- [ ] **D.** Air pollution

4:

Which of the following is aided by locating a project within a dense area?

- ○ **A.** Promoting vehicles with alternative fuels
- ○ **B.** Promoting walkability
- ○ **C.** Increased diversity
- ○ **D.** Preserving historic districts

5:

Which of the following is a priority designation used in LEED?

- ○ **A.** To help projects locate near existing infrastructure
- ○ **B.** To encourage investment in economically disadvantaged or low-income areas
- ○ **C.** To prevent project teams from building in sensitive habitats
- ○ **D.** To encourage project teams to build in a LEED-ND project area

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6:

If a project owner locates a building close to a bicycle network, which of the following project elements could decrease?

- A. Rainwater runoff
- B. The number of diverse uses
- C. Surrounding density
- D. Parking

7:

If a building owner selected a project site in an existing community with proximity to existing utility lines and street networks, in which of the following ways would it save on project costs?

- A. By reduced infrastructure costs
- B. By increased availability of grid-source renewable energy
- C. By reduced costs of electric transmission
- D. By increased opportunities to participate in demand-response programs

---

8:

Decreasing the parking footprint of a project can be accomplished by which of the following actions?

(Choose 3)

- A. Not including the parking area in the LEED project boundary
- B. Separating employee and visitor parking

- [ ] **C.** Instituting transportation demand management strategies
- [ ] **D.** Building in places well served by transit
- [ ] **E.** Locating projects in high-density, mixed-use areas

---

9:

What is NOT an example of smart growth?

- ○ **A.** Residential development on a previously developed site located near shops and schools
- ○ **B.** Development of a site that is far from existing development and infrastructure
- ○ **C.** Retail, office, and residential townhouses on the site of a former gas station
- ○ **D.** Neighborhood design that has offices and shops within walking distance to public transportation

---

10:

Which of the following use-type categories determine diverse uses?

(Choose 2)

- [ ] **A.** Food retail
- [ ] **B.** Restaurants
- [ ] **C.** Civic and community facilities
- [ ] **D.** Stores

11:

Which of the following are reasons an owner should build a new construction project in a LEED for Neighborhood Development location?

(Choose 2)

- [ ] **A.** The project would have excellent location and transportation within the surrounding community.
- [ ] **B.** The project certification fees would be reduced.
- [ ] **C.** The project would earn an innovation credit.
- [ ] **D.** The certification process would be easier

12:

Which of the following is an acceptable way to encourage building users to choose alternative transportation?

- ○ **A.** Share parking among two or more buildings
- ○ **B.** Allow off-street parking
- ○ **C.** Install preferred parking
- ○ **D.** Install multi-level parking

13:

Which of the following site types is considered high-priority?

- ○ **A.** Historic district

- **B.** Area on or within fifty feet (fifteen meters) of a wetland
- **C.** Previously developed land
- **D.** Land with endangered habitat

14:

What is a benefit of selecting a project location surrounded by existing built density?

- **A.** Protection of undeveloped land
- **B.** More lenient zoning rules
- **C.** Increased availability of rainwater
- **D.** Reduction of heat islands

15:

What urban area is a best choice for a LEED project?

- **A.** Areas that have not been previously developed
- **B.** Areas with high development density
- **C.** Areas without existing infrastructure
- **D.** Areas with zero-lot-lines

16:

What factors related to location would NOT affect a project team's priorities?

- A. Local zoning requires all buildings to be no more than four stories high
- B. The community emphasizes sports and athletics for all ages
- C. There are no banks nearby that provide construction loans
- D. The area only receives 12" (30 cm) of rainfall each year

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17:

Locating a project in any of the high-priority site types can increase the likelihood of which of the following:

- A. The project being in a dense area served by transit and diverse uses
- B. The project being located on a greenfield
- C. The project site having sensitive habitat
- D. The project not being located on a brownfield

18:

Which of the following actions can a project team take to increase the density of the project building?

- A. Locate the project near a variety of use types
- B. Select an infill site for the building
- C. Create a smaller footprint and maximize the floor-area ratio
- D. Locate the building in a dense neighborhood

19:

What is a brownfield?

- A. An infill site
- B. Previously used or redeveloped land that may be contaminated with hazardous waste or pollution
- C. Gaps between existing infrastructure
- D. A site that has been graded

20:

How could a remote project located away from public transportation reduce its transportation effects?

- A. Stagger work hours for users
- B. Locate a project site near a park
- C. Install pervious pavement
- D. Encourage carpooling

21:

A project team decides to reduce the project's parking footprint. Which of the following additional areas of the project could this also aid?

- A. Restoring habitat

- B. Protecting sensitive land
- C. Increasing the project density
- D. Encouraging walkable design

22:

A project team is reviewing potential sites for a new office building. Which of the following sites would be preferred?

- A. Selecting a site that requires occupants to drive 40 minutes each way to the building
- B. Locating the site in an area with pedestrian access to retail shops
- C. Choosing a site in a LEED for Neighborhood Development location
- D. Building on a greenfield

23:

In which of the following instances would a project team need to use the ITE Transportation Planning Handbook?

- A. When calculating a project's parking capacity
- B. When reviewing planned future public transportation routes
- C. When determining if a bicycle network is adequate
- D. When locating existing rights-of-way when determining surrounding density

---

24:

Which of the following is NOT a type of diverse use?

- **A.** A public park
- **B.** A police station
- **C.** An ATM
- **D.** A barber shop

25:

Which of the following are examples of infill development?

(Choose 2)

- **A.** A store built between two existing urban buildings
- **B.** A design that increases the number of units of residential space per acre
- **C.** An office project on a previously developed site in a city center
- **D.** The development of a brownfield site

26:

What is the impact of creating a dense, compact mixed-use neighborhood?

- **A.** Decreased availability of alternative transportation
- **B.** Increased in the travel time to work for occupants

- C. Less pavement for roads and less infrastructure for utilities
- D. Increased in flooding from stormwater runoff and the heat island effect

---

27:

Which of the following can project teams use to identify a sensitive habitat?

(Choose 2)

- A. The International Society of Arboriculture (ISA)
- B. The U.S. Code of Federal Regulations
- C. The Natural Heritage Program
- D. State fish and wildlife agencies (or local equivalent)

28:

Which of the following does NOT support users seeking alternative transportation options?

- A. Including alternative-fuel facilities
- B. Installing bicycle storage
- C. Providing preferred parking for green vehicles
- D. Sharing parking among two or more buildings

29:

Selecting which of the following sites would have the greatest positive environmental impact?

- A. An old building
- B. A previously undeveloped site
- C. Locating the project near public parking
- D. Parkland near diverse uses

30:

How would the distance from a building's entrance to the nearest bus stop be measured?

- A. By calculating the street and/or bicycle network distance
- B. By calculating the walking distance along infrastructure that is safe and comfortable for pedestrians
- C. By determining the street network distance, excluding private drives
- D. By determining the straight-line radius from point to point.

31:

What credit category rewards project teams for taking advantage of existing patterns of development and land density?

- A. Sustainable Sites
- B. Location and Transportation
- C. Innovation
- D. Regional Priority

32:

Which of these sites if selected would most help with increasing diversity of uses?

- A. A site located within walking distance of a commuter rail line
- B. A site that has underground parking and open space on the property
- C. A site located next door to an ATM
- D. A site within walking distance to a public park

33:

A project team wants to reuse a building in a historic district for a project. Which of the following credit areas will this aid?

(Choose 2)

- A. High-priority sites
- B. Protecting or restoring habitat
- C. Sensitive land protection
- D. Building reuse

34:

Which of the following helps encourage building users to take alternative transportation?

- A. Using permeable paving for parking lots
- B. Including off-street parking spaces

- C. Reducing the number of bicycle spaces
- D. Limiting parking
- E. Sharing parking among two or more buildings

35:

The use of a brownfield site can enhance a community. What must occur for a brownfield site to be developed?

- A. The site must be revegetated
- B. The site must be remediated
- C. The site must be located in a suburban area
- D. The site must be located along existing roads

36:

What are the environmental benefits of selecting a previously developed site for a project?

- A. Local tax savings may be available
- B. Preserving open space
- C. The site would be located near mass transit
- D. The site would have a greater development density

37:

A project team is removing from the design a solar car shading device that also serves as a fueling station. Which of the following is this most likely to impact?

(Choose 2)

- [ ] **A.** Heat island reduction
- [ ] **B.** Rainwater management
- [ ] **C.** Reduced parking footprint
- [ ] **D.** Green vehicles

38:

Which of the following is aided by the avoidance of building on sensitive land or previously undeveloped land?

- ○ **A.** Reducing parking footprint
- ○ **B.** Rainwater management
- ○ **C.** Reducing vehicle miles traveled
- ○ **D.** Brownfield remediation

39:

A vehicle meeting which standard would be considered a green vehicle?

- **A.** Vehicle with a minimum green score of 45 on the ACEEE annual vehicle guide
- **B.** EPA Transportation and Air Quality standard
- **C.** SCAQMD air quality standards
- **D.** Green-e Certified

40:

LEED rewards projects for all of the following design strategies EXCEPT which of the following:

- **A.** Locating the project in an area with nearby uses
- **B.** Limiting parking
- **C.** Locating the project in a historic district
- **D.** Locating the project near existing utilities

41:

A developer is planning a mixed-use project that will include 1,000 single family homes, office space, retail, and townhomes. Which of the following neighborhood design strategies help promote connectivity?

- **A.** Providing housing types for a wide range of incomes
- **B.** Cul-de-sacs

- C. Gated communities
- D. Street-grid patterns

42:

How would access to quality transit be documented?

- A. By a map showing the project site, location, type of transportation resources, and driving distances to each location.
- B. By a map showing the project, project boundary, transit stop locations, walking routes, and distances to those stops
- C. By an area plan or map showing the project site and location of transit stop locations within a 1/4 mile (400-meter) radius of the project site
- D. By an area plan or map showing the project site and location of transit stop locations within a 1/2 mile (800-meter) radius of the project site

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43:

If a project team is interested in developing on a previously developed site but this option is infeasible, which of the following options should the project team consider next?

- A. Locating prime farmland
- B. Not disturbing sensitive land types
- C. Conducting a soil survey
- D. Developing on a greenfield

44:

A health-conscious business owner wants to consider design selections that would encourage employee health. Which of the following strategies meet this goal?

(Choose 2)

- [ ] **A.** Site the project near a city's downtown area
- [ ] **B.** Install preferred parking spots for green vehicles
- [ ] **C.** Locate the project near public transportation
- [ ] **D.** Build within walking distance of a bicycle network
- [ ] **E.** Select a site that has existing infrastructure

45:

How would a bicycle network be documented for a project?

- ○ **A.** By drawing a straight-line radius from the origin and the bicycling segments in the radius.
- ○ **B.** By including a vicinity map showing the bicycle network, route, and distance along the network to eligible destinations
- ○ **C.** By creating a map showing the project, project boundary, transit stop locations, and walking routes and distances.
- ○ **D.** By use the area plan or map showing the project site and location of existing and planned bicycle networks within a quarter-mile (400-meter) radius of the project site.

[Sustainable Sites]

1:

Which of the following actions can a project team take to help manage runoff on-site in a dense urban area?

(Choose 2)

- ☐ **A.** Increase the size of the drainage pipes
- ☐ **B.** Install a green roof
- ☐ **C.** Design all parking under the building
- ☐ **D.** Harvest rainwater

2:

What does the use of light-colored, pervious paving help with?

(Choose 2)

- ☐ **A.** Heat island reduction
- ☐ **B.** Open space
- ☐ **C.** Habitat conservation
- ☐ **D.** Rainwater management

3:

In an integrated approach to rainwater management, which of the following actions should a project team take to reduce runoff volume and improve water quality?

- A. Control soil erosion from construction activities
- B. Provide habitat and promote biodiversity
- C. Replicate the natural hydrology and water balance of the site
- D. Assess the site for environmental contamination

4:

What is a benefit of increasing the quantity of open space on a project?

(Choose 2)

- A. More habitat for vegetation and wildlife
- B. Increasing rainwater infiltration
- C. Increased durability of the overall project
- D. Reducing potable water use

5:

A project that specifies soil restoration as part of its site design is contributing to which of the following environmental benefits?

- A. Increasing open space
- B. Reducing heat islands
- C. Preventing construction activity pollution
- D. Restoring habitat

6:

A team wants to provide quality open space on the project site. Which of the following strategies should it consider?

- **A.** A walking trail around the property
- **B.** A private garden for company executives
- **C.** A water-detention pond
- **D.** A community garden located adjacent to the project boundary

---

7:

What are the economic benefits of installing a vegetated roof?

- **A.** Provides occupants a connection to the outdoors
- **B.** Lower investment cost compared to roof surfaces with high SRI
- **C.** Increased habitat for birds
- **D.** Lower cooling costs for HVAC

8:

What does LEED accept as part of a building design to qualify as open space for projects in urban areas?

- **A.** Higher density buildings
- **B.** Shaded parking lots

- C. Vegetated (green) roofs
- D. Balconies

9:

The use of open grid pavement can help a project achieve points in what LEED areas?

(Choose 2)

- A. Heat Island Reduction
- B. Rainwater Management
- C. Outdoor Water Use Reduction
- D. Open Space

10:

What is true about a project that is located in an urban area?

- A. The project team will likely have to select a site on previously undeveloped land
- B. The project is likely to experience higher cooling costs due to the heat island effect
- C. The project will need to be located near mass transit to achieve LEED certification
- D. The design of the project within the project boundary is unlikely to contain open space

---

11:

Which of the following strategies can a project team combine to mimic natural systems and manage rainwater?

- **A.** Submetering irrigation systems and replacing potable water with non-potable water
- **B.** Green infrastructure (GI) and low-impact development (LID)
- **C.** Xeriscaping and monitoring yearly rainfall
- **D.** Piping and conveyance

12:

A project team decides to build up, instead of out, to reduce the building footprint. This strategy could help with _____.

- **A.** Increasing surrounding density
- **B.** Increasing open space
- **C.** Increasing diverse uses
- **D.** Construction activity pollution prevention

13:

What does the emissivity of a material refer to?

- **A.** The measure of a material's ability to reflect sunlight (including the visible, infrared, and ultraviolet wavelengths) on a scale of 0 to 1

- B. How hot a surface gets relative to standard black and standard white surfaces
- C. The ratio of energy radiated by a particular material to energy radiated by a black body at the same temperature
- D. The environmental benefits of the material over time

14:

What environmental issue occurs from runoff?

- A. Heat islands
- B. Ozone depletion
- C. Increased municipal wastewater treatment costs
- D. Sedimentation

15:

What design strategy would promote biodiversity the most?

- A. Installing a rock garden
- B. Increasing open space and covering it with turf grass
- C. Installing a dry pond planted with invasive plants
- D. Planting a variety of indigenous plants

16:

What design strategy would reduce the light trespass from a site to help prevent light pollution?

- **A.** Install lamp posts every 20 feet (6 meters) around the entire property line
- **B.** Install shielded fixtures
- **C.** Up-lighting
- **D.** Paint all hardscapes white

17:

Which of the following project features does NOT promote biodiversity?

- **A.** An extensive green roof
- **B.** An intensive green roof
- **C.** A soccer field
- **D.** The financial support of a conservation organization

---

18:

Which of the following has the most synergy with other credits?

- **A.** Green cleaning
- **B.** Quality of views
- **C.** Site assessment

- D. Acoustics

19:

What are ways to reduce water pollution from runoff?

(Choose 2)

- A. Impervious concrete hardscapes
- B. Increasing the building footprint
- C. Rain gardens
- D. Open grid paving

20:

What is a strategy for construction activity pollution prevention that would prevent waterway sedimentation?

- A. Increasing soil compaction
- B. Providing natural buffers around the property
- C. Reducing fertilization
- D. Protecting on-site materials

21:

A project design includes low-impact development and erosion and sedimentation control. Which of the following will be aided by these strategies?

(Choose 2)

- [ ] **A.** An increase of the floor-area ratio
- [ ] **B.** Walkability
- [ ] **C.** Access to diverse uses
- [ ] **D.** On-site rainwater management
- [ ] **E.** The creation of buffers between development and water resource

---

22:

A project team has decided to modify a low SRI roof design to include a vegetated roof to help with rainwater management. What other credit would this decision help with?

- ○ **A.** On-site renewable energy
- ○ **B.** Construction activity pollution prevention
- ○ **C.** Heat island reduction
- ○ **D.** Light pollution reduction

23:

How can the heat island effect on the roof of a building be reduced?

- A. Increasing the amount of roof insulation
- B. Covering the roof with recycled materials
- C. Providing underground parking
- D. Painting the roof with a high SRI coating

24:

What information is needed to calculate the SRI of a material?

(Choose 2)

- A. Emissivity
- B. Thermal gradient
- C. Thickness of the material
- D. Reflectance

25:

A LEED project is in the pre-design phase, and a previously developed site has already been selected. The team wants to protect or restore habitat. Which of the following strategies should they consider?

- A. Using pervious paving materials for the parking area
- B. Restoring compacted soils and revegetating

- C. Increasing the floor-to-area ratio of the building
- D. Implementing a construction activity pollution plan

26:

The project owner of a LEED BD+C Retail project has decided NOT to provide financial support to a local land trust. Which of the following will this decision impact?

- A. Open space
- B. Habitat protection or restoration
- C. Surrounding density and diverse uses
- D. Reduced-parking footprint

27:

Reducing the building's footprint will have positive synergies with which of the following?

(Choose 2)

- A. Open space
- B. Surrounding density
- C. Preservation of historic districts
- D. Access to diverse uses
- E. Rainwater management

28:

Why would a landscape designer choose native landscaping in an arid climate?

(Choose 2)

- [ ] **A.** Provide linked habitat corridors in urban areas
- [ ] **B.** Increase occupant well-being and productivity
- [ ] **C.** Heat island reduction
- [ ] **D.** Minimize evapotranspiration
- [ ] **E.** Support integrated pest management (IPM)

29:

Which of the following does a site assessment evaluate?

(Choose 3)

- [ ] **A.** Surrounding density
- [ ] **B.** Geology
- [ ] **C.** Existing structures
- [ ] **D.** Hydrology
- [ ] **E.** Shading

30:

Projects may be able to use some of the same techniques for both _____:

- A. construction activity pollution prevention and habitat conservation and restoration.
- B. exterior lighting reduction and quality views.
- C. site assessment and submetering.
- D. designing for flexibility and open space.

31:

What material attribute would a project team use to compare different products' abilities to reject solar heat?

- A. ENERGY STAR label
- B. Emissivity
- C. Solar Reflectance Index (SRI)
- D. Environmental Product Declaration (EPD)

32:

Which of the following can increase the heat island effect in urban areas?

(Choose 2)

- A. Rooftops covered with a high SRI material
- B. Street equipment

- [ ] **C.** Buildings that have passive ventilation
- [ ] **D.** Air-conditioners

33:

A bioswale would be used to help earn credit in what LEED category?

- ○ **A.** Sustainable Sites
- ○ **B.** Energy and Atmosphere
- ○ **C.** Indoor Environmental Quality
- ○ **D.** Water Efficiency

34:

Which of the following project team member(s) is typically responsible for developing the erosion and sedimentation control (ESC) plan for construction activity pollution prevention?

- ○ **A.** The architect(s)
- ○ **B.** The LEED AP
- ○ **C.** The project owner(s)
- ○ **D.** The civil engineer(s)

35:

Construction activity pollution prevention should address what environmental protection measures?

(Choose 3)

- [ ] **A.** Waterway sedimentation
- [ ] **B.** Soil erosion
- [ ] **C.** Greenhouse gas emissions
- [ ] **D.** Fresh water consumption
- [ ] **E.** Ozone protection
- [ ] **F.** Airborne dust

36:

When evaluating materials that would help with heat-island reduction, which of the following is the MOST important material attribute?

- ○ **A.** A three-year aged SR value
- ○ **B.** Thermal emittance
- ○ **C.** An SRI
- ○ **D.** An SR

37:

The Sustainable Sites category focuses on all of the following EXCEPT which of the following:

- ○ **A.** Integrating the site with local and regional ecosystems
- ○ **B.** Preserving the biodiversity on which natural systems rely

- C. Restoring project site elements
- D. The ways in which community infrastructure affects occupants' behavior and environmental performance.

38:

A project team is evaluating materials to help reduce heat islands for a building's roof and parking lot in a dense urban center. Which of the following would be most effective?

(Choose 2)

- A. Black materials
- B. High SRI materials
- C. Reflective materials
- D. Recycled materials
- E. Materials low up-front costs

39:

A United Nations study indicates that which of the following percentages of the ecosystem services that have been assessed worldwide are currently degraded or used unsustainably?

- A. 60%
- B. 30%
- C. 40%
- D. 50%

40:

A project site in an urban area has already been selected by an owner. The team is researching how it can reduce the heat-island effect and have open space at the lowest cost. Which of the following should be considered for a rooftop design?

- **A.** A roof covered with high SRI material
- **B.** An extensive vegetated roof
- **C.** An intensive vegetated roof
- **D.** An artificial turf soccer field on the roof

41:

A project developer is creating an erosion and sedimentation control plan. The plan must conform to which of the following requirements?

- **A.** The landscape architect's site elevations
- **B.** The EPA Construction General Permit or the local equivalent
- **C.** The LEED ESC Plan
- **D.** The Owner's Project Requirements (OPR)

42:

Which part of the development process would inform design decisions, such as locating community gardens in areas with fertile soils?

- **A.** Construction activity pollution prevention

- **B.** Energy modeling
- **C.** Environmental site assessment
- **D.** Site assessment

43:

A project owner is locating an office building on a greenfield near a wetland. The project team has goals of protecting sensitive ecosystems, reducing the heat-island effect, designing a healthy building, and reducing energy demand. Given these goals, where should the project team start?

- **A.** By determining if a demand response program is available from the local utility company
- **B.** By sourcing local materials
- **C.** By finding out if the owner can lease a renewable energy system
- **D.** By completing an early site assessment

44:

A project owner is concerned about the safety of building occupants during the evening hours as they walk to the parking lot. What exterior lighting strategy would ensure occupant safety, prevent light pollution, and conserve energy?

- **A.** Strategically place lighting to shine into the roads surrounding the property
- **B.** Installing timers that shut off the lights after hours
- **C.** Install up-lighting in the parking lot
- **D.** Use shielded LED fixtures that are on 24 hours day

45:

A project team will provide outdoor space to encourage occupant health and activity. Which of the following are examples of quality open space?

(Choose 2)

- [ ] **A.** Small strips of turf in parking lots
- [ ] **B.** A jogging trail
- [ ] **C.** Garden space dedicated to community gardens
- [ ] **D.** An artificial turf for an outdoor soccer field

46:

Which of the following can happen as a result of increased rainwater runoff?

- ○ **A.** Eutrophication
- ○ **B.** Increased heat islands
- ○ **C.** Decreased energy performance
- ○ **D.** Increased potable water use

47:

What type of plants should be used on a green roof to promote biodiversity?

- ○ **A.** Plants with high watering needs
- ○ **B.** Native plants

- C. Monocultures
- D. Tall plants that provide shade

48:

Which of the following can increase the heat island effect in urban areas?

- A. Underground parking
- B. Hardscapes shaded by trees
- C. Large areas of turf grass
- D. Reduced air flow from tall buildings and narrow streets

49:

Construction activity pollution prevention has synergies with which of the following other project areas?

(Choose 2)

- A. Rainwater management
- B. Outdoor water use
- C. Heat island reduction
- D. Protecting or restoring habitat

50:

A data center is located in a remote, forested area. In which of the following ways could the project team reduce light pollution?

- **A.** By increasing the number of exterior lights
- **B.** By installing surfaces and lights that reduce glare
- **C.** By placing exterior lights close to the project boundary
- **D.** By installing lights that shine upward

[Project Surroundings & Public outreach]

1:

What specifies the set of rules for the minimum acceptable level of safety for buildings?

- **A.** American Institute of Architects
- **B.** Building codes
- **C.** Local ordinances
- **D.** Local zoning

2:

A building with a vegetated roof is going to require additional costs for more materials to support the structure and for waterproofing, as well as plant materials. What are the life cycle costing benefits of a vegetated roof?

(Choose 2)

- **A.** Longer product life
- **B.** Reduced heat islands
- **C.** Lower maintenance costs
- **D.** Reduction in rainwater runoff

3:

What green building codes can be enforced by law?

(Choose 2)

- [ ] **A.** International Green Construction Code
- [ ] **B.** ENERGYSTAR
- [ ] **C.** ASHRAE 189.1
- [ ] **D.** LEED

4:

What organization develops building safety and fire prevention codes for the construction of residential and commercial buildings, including homes and schools?

- ○ **A.** International Code Council
- ○ **B.** Department of Energy (DoE)
- ○ **C.** Underwriters Laboratory (UL)
- ○ **D.** ASHRAE

5:

What helps a project take advantage of the environmental assets of the area they live in?

- ○ **A.** Regional Priority credits
- ○ **B.** Prerequisites
- ○ **C.** Minimum Program Requirements
- ○ **D.** Local building code

6:

Which building project supports the triple bottom line?

- **A.** Energy efficient building that has poor acoustics
- **B.** Building renovation in a federal empowerment zone
- **C.** Flooring material with a small carbon footprint extracted from an area that displaced local people
- **D.** Eco-resort built in an area with threatened species

7:

What is the most impactful way that a project can help to reverse contribution to climate change?

- **A.** Reducing fossil-fuel based energy consumption
- **B.** Choosing healthy building materials
- **C.** Locating the project near diverse uses
- **D.** Using salvaged materials

8:

What is an example of value engineering?

- **A.** Increasing the diversion rate of recycled materials
- **B.** Choosing a flooring material that has higher costs and a lower environmental impact over a flooring material that has lower costs and a greater environmental impact

- C. Replacing an asphalt parking lot with less costly crushed gravel that has higher SRI
- D. Selecting insulation with higher upfront costs but lower life cycle costs

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9:

What is an example of a construction hard cost?

- A. Permit fees
- B. Payments received from recycled materials
- C. Reporting on a building's energy consumption over time
- D. On-site renewable energy system

10:

A team for a school project is reviewing potential site locations and building designs. What would have the greatest impact on improving test scores for the students?

- A. Including an indoor swimming pool
- B. Orienting the building to maximize daylighting
- C. Installing low-emitting furniture and desks
- D. Locating the building in a walkable neighborhood

11:

For which of the following are the ICC International Codes used?

- **A.** Establishing energy-efficiency guidelines for public buildings
- **B.** Guiding code officials about hazardous chemicals contained in building materials
- **C.** Providing minimum safeguards for people at home, at school, and in the workplace
- **D.** Defining minimum indoor air quality standards

12:

Which of the following would be classified as a soft construction cost?

- **A.** Civil engineer consulting fee
- **B.** Rental of a dumpster
- **C.** Purchase of some steel
- **D.** Construction worker labor costs

13:

The operation of buildings, including landscaping, accounts for ____ of total water use in the United States.

- **A.** 18%
- **B.** 6%
- **C.** 12%

- **D.** 20%

14:

What environmental externalities occur when buildings use significant quantities of potable water indoors?

- **A.** Increased environmental burdens on the water supply
- **B.** Increased stormwater runoff
- **C.** Increased water rates
- **D.** Decreased energy efficiency

15:

What is an example of regenerative design?

- **A.** A project with a community recycling program
- **B.** A building that generates electricity and sends the excess to the grid
- **C.** A building that uses rainwater onsite
- **D.** A net-zero energy building

16:

Compared to a conventional building, a green building project and construction budget will also include:

- A. Soft costs
- B. Costs to implement erosion control plans
- C. Life cycle costing
- D. Fees to review local laws and standards

17:

Which of the following has the lowest soft cost?

- A. Self-guided education program on the green features of a project
- B. Renewable Energy Credits (RECs)
- C. Legal fees for building contracts
- D. Construction waste hauling fees

18:

What are examples of construction hard costs for an office condominium project?

(Choose 2)

- A. Masonry costs paid to a sub-contractor
- B. Fees to develop tenant agreements
- C. Irrigation fees for water use
- D. Cost for installing a green roof

19:

What is considered a positive externality of LEED-certified buildings on building occupants?

- **A.** Improved daylighting
- **B.** Decreased absenteeism
- **C.** Energy efficiency improvements
- **D.** Reduced water consumption

20:

What low / no cost structural incentive can a municipality make to a developer to encourage green building?

- **A.** Allowing increases in the floor area ratio
- **B.** Fee waivers
- **C.** Green building grants
- **D.** Tax credits

21:

What statement is true regarding green building?

- **A.** The construction of green buildings have no major significant cost difference to non-green buildings
- **B.** LEED buildings were increasingly common until construction costs rose 30% in the last two years

C. Green design is a cost neutral add-on

D. LEED teams are achieving certification through widely diverse methods

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22:

The built environment, including buildings and transportation systems, account for what percent of all greenhouse gas emissions?

A. 1/4

B. 2/3

C. 1/3

D. 1/2

23:

What is true if a building code official finds an issue between a proposed energy efficiency strategy and the city's building electrical code?

A. A LEED reviewer must approve the existing strategy

B. The project administrator should re-run the energy model

C. The electrical contractor can proceed with the design

D. The project team must alter the design

24:

What term refers to the investigation and valuation of the environmental impacts of a given product or service caused or necessitated by its existence?

- **A.** Life cycle assessment
- **B.** Life cycle costing
- **C.** Soft cost
- **D.** Hard cost

25:

Before using graywater to irrigate a project's landscape the landscape architect should review:

- **A.** EPA WaterSense Water Budget Tool
- **B.** ENERGY STAR WaterSense
- **C.** EPA Rainwater Management Model
- **D.** Local codes

26:

If a state has a green building code and a project team wants to pursue LEED certification:

- **A.** The state building code requirements can be used instead of the LEED requirements
- **B.** The state building code requirements have precedent over the LEED requirements
- **C.** LEED requirements can be used instead of the state building code requirements

- D. The project team can follow either the state building code requirements or the LEED requirements

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27:

What options within LEED credits address different geographic and climactic regions while providing solutions to challenges faced by projects at a regional level?

- A. Alternative Compliance Paths
- B. Minimum program requirements (MPRs)
- C. Innovation credits
- D. Regional priority credits

28:

What are some of the economic benefits of green building?

(Choose 2)

- A. Reduced liabilities due to poor indoor air quality causing health issues
- B. Reduced utility costs
- C. Reduced disturbance of greenfield sites
- D. Increasing the tax base to the community

29:

The triple bottom line can be described as:

- A. The cost of green building
- B. Integration of a building with its natural surroundings
- C. People, planet, profit
- D. Socially responsible enterprise and investment

30:

Green buildings have on average energy use intensities that are ____ lower than in typical buildings.

- A. 28%
- B. 16%
- C. 24%
- D. 12%

31:

If a project team increases the ventilation in a building and adds quality views to occupant spaces what will be the result?

- A. Increased resource use for the project
- B. Decreased first costs
- C. Improved productivity of the occupants
- D. Decreased air quality for the occupants

32:

The linear use of resources where outputs are treated as waste contributes to the toxins accumulating in the atmosphere, water and on the ground. This has accelerated the pace of the planet's biggest problem which is:

- **A.** Poor water quality
- **B.** Indoor air quality
- **C.** Products containing hazardous chemicals
- **D.** Climate change

33:

Which percentage of the Earth's water is fresh water?

- **A.** 5%
- **B.** 3%
- **C.** 10%
- **D.** 7%

34:

Sustainable plans for built environments that improve existing conditions is called:

- **A.** Adaptive reuse
- **B.** Regenerative design

- C. Passive design
- D. Net-zero energy project

35:

Globally transportation is responsible for what percent of greenhouse gas emissions?

- A. 35%
- B. 25%
- C. 20%
- D. 30%

36:

Which of the following does green building help with creating?

(Choose 2)

- A. Increased segregated land use
- B. Communities that are more vital to a healthy society
- C. Lower-impact built environments
- D. Increased building operational costs

37:

What is the term for the analysis of the environmental aspects and potential impacts associated with a product, process, or service?

- A. Life-cycle assessment
- B. Triple bottom line accounting
- C. Life-cycle costing
- D. ASHRAE Level I audit

38:

What is an example of an ongoing operating cost?

- A. Salaries for janitorial services in a building
- B. Design of a sedimentation control plan
- C. Attorney fees for building contracts
- D. Carpet installation

39:

Relative to the LEED project design what has a low soft cost?

- A. Facility management costs
- B. Building commissioning
- C. Cost of the LEED charrette

- D. Carpet installation

40:

Economic prosperity, environmental stewardship, and social responsibility define a project's:

- A. Minimum Program Requirements
- B. Innovation
- C. Triple bottom line
- D. Federal, state, and/or local regulations

41:

What financial incentives can a municipality offer to a developer that proposes a green building?

(Choose 3)

- [ ] A. Percentage increase in the floor area ratio
- [ ] B. Increases in the allowable density
- [ ] C. Allowing a building to be have an increased height
- [ ] D. Tax credits
- [ ] E. Fee waivers
- [ ] F. Revolving loan funds

42:

What is the value of documenting and tracking a building's resource use?

- **A.** Reduces end-of-life costs
- **B.** Contributes to knowledge that will advance research in the future
- **C.** Reduces a building's embodied energy
- **D.** Reduces first costs

43:

A project building in a colder climate is located in a basin that replenishes the water supply each spring from the snow on nearby mountains. If the design team thinks ahead to the future, how would this influence the design of the project?

- **A.** Natural gas for heating should be used
- **B.** Adaptive reuse should be considered
- **C.** Commissioning will be important
- **D.** Water conservation should be emphasized

44:

What are local ordinances?

- **A.** A law usually found in a municipal code
- **B.** Building codes based on national model codes

- C. Local government regulations imposed to promote orderly development of private lands and prevent land-use conflicts
- D. Recommendations for good building practices

45:

From where are most local codes adopted?

- A. USGBC
- B. California laws
- C. International Code Council
- D. Federal regulations

46:

What non-financial incentives can a municipality offer to encourage developers to build residential projects to green standards?

(Choose 2)

- [ ] A. Grants
- [ ] B. Marketing assistance for the property
- [ ] C. Low interest loans
- [ ] D. Certification training for developers who are unfamiliar with green building practices

---

47:

In the United States buildings account for ____ electricity consumption.

- **A.** 74%
- **B.** 56%
- **C.** 66%
- **D.** 72%

48:

What metric is useful for determining the energy, water, solid waste, materials, and transportation impacts of buildings and communities?

- **A.** Carbon emissions
- **B.** H2O emissions
- **C.** Ozone depletion potential
- **D.** CFC leakage rate

49:

What are examples of structural incentives that may be available to a developer to encourage green building?

(Choose 2)

- **A.** Tax credits

- [ ] **B.** Grants
- [ ] **C.** Density bonuses
- [ ] **D.** Fee waivers
- [ ] **E.** Expedited review of permits

50:

Which of the following is most important to the design and construction of a building for emissions reduction?

- ○ **A.** Choosing sustainable materials
- ○ **B.** Building location
- ○ **C.** Using on-site renewables
- ○ **D.** Purchasing carbon offsets

51:

What does the built environment refer to?

- ○ **A.** The green building movement
- ○ **B.** A process of continually improving buildings
- ○ **C.** Any environment that is human-made and provides a structure for human activity
- ○ **D.** Structures that provide stronger connections to nature

---

52:

What must be considered in the project budget for a green building project that would not be part of a conventional project?

- **A.** Selecting only ENERGY STAR appliances
- **B.** Additional time in the schedule for construction
- **C.** Added building equipment to make the building more energy efficient
- **D.** Contingencies for research of unconventional techniques or materials

---

53:

Which of the following is an example of the triple bottom line in practice?

- **A.** A residential project that contributes to neighborhood revitalization
- **B.** A building material purchased and shipped from overseas
- **C.** An energy efficient building built on a site with endangered species
- **D.** A building with good indoor air quality and minimal insulation

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54:

A developer for an office building will lease out spaces to tenants. What is the value to the developer for certifying the building?

- **A.** Certified green office buildings receive 0% interest loans
- **B.** Certified green office buildings do not have to go through the permitting process

- C. Certified green office buildings rent for 2% more than comparable buildings
- D. Certified green office buildings have guaranteed grants from local governments

---

55:

What is a negative environmental externality of locating a project in an area does not have diverse uses and is not densely developed?

- A. Increased development costs
- B. Availability of high-paying jobs
- C. Increased tax base
- D. Increased air pollution

56:

If a developer is planning on building a multi-family residential project what are the most important things the project team should consider?

(Choose 2)

- [ ] A. Proximity to waste haulers
- [ ] B. Local zoning
- [ ] C. Nearby LEED BD+C projects
- [ ] D. Available LEED ND projects close by

57:

What is an economic benefit for the triple bottom line that LEED-certified buildings may have?

- A. More healthful and productive environments for occupants
- B. Reduced waste sent to landfills
- C. Qualification for tax rebates
- D. Reductions in greenhouse gas emissions

58:

How can the greenhouse gas emissions caused by the built environment be reduced?

(Choose 2)

- A. Implementing a waste-to-energy program
- B. Installing single pane glazing in buildings
- C. Building on a greenfield site
- D. Improving the energy efficiency of communities
- E. Improving the energy efficiency of buildings

59:

A business owner that purchases a fleet of green delivery vehicles reduces what externality?

- A. The comfort of the drivers

- B. Additional parking spaces for green vehicles
- C. Pollution added to the environment
- D. Sales tax revenue to the community

60:

What accounting methodology is used to evaluate the economic performance of a product or system over its useful life?

- A. Life cycle costing
- B. Life cycle assessment
- C. Triple bottom line accounting
- D. Cradle-to-cradle

61:

What are the long term effects of climate change?

(Choose 3)

- A. Higher temperatures
- B. Longer droughts
- C. Increased glaciers
- D. Higher sea levels
- E. Reduced CO2 emissions

☐ **F.** Increased ozone layer

62:

What process identifies the high-performance building systems that will save money over the life of a project?

○ **A.** Life-cycle assessment

○ **B.** First costs

○ **C.** Value engineering

○ **D.** Life-cycle costing

63:

How does LEED encourage focusing on regional issues?

○ **A.** Awarding more points to those projects that have ENERGY STAR ratings

○ **B.** Regional priority credits

○ **C.** Adhering to all local building codes

○ **D.** Using reasonable LEED boundaries

64:

The green design approach taken by LEED:

○ **A.** Can only be used on projects with large budgets to offset the higher expenses of green

building

- **B.** Reduces the environmental harms of buildings and restores the balance of natural systems
- **C.** Emphasizes occupant health over saving energy
- **D.** Is useful only in urban areas where there is existing infrastructure

---

65:

What review practice identifies design alternatives that reduce costs while yielding higher performance?

- **A.** Environmentally responsive design
- **B.** Life cycle assessment
- **C.** Life cycle costing
- **D.** Value engineering

66:

A building's total emissions footprint does which of the following over time?

- **A.** Incrementally decreases
- **B.** Fluctuates
- **C.** Incrementally increases
- **D.** Remains the same

67:

A project team wants to install a rainwater harvesting system to provide water to flush toilets but local code does not permit this. What should the project team do?

- **A.** Have the plumbers install the system anyway
- **B.** Submit a CIR to the LEED project reviewer
- **C.** Request an exception from the LEED project reviewer to allow the reduction anyway
- **D.** Find alternative solutions for indoor water use reduction

---

68:

A study by the New Buildings Institute found that in green buildings, average energy use intensities (energy consumed per unit of floor space) are _____ than in typical buildings

- **A.** 24% lower
- **B.** 16% lower
- **C.** 5% higher
- **D.** 32% lower

69:

In the United States buildings account for ____ carbon dioxide emissions.

- **A.** 26%
- **B.** 34%

C. 42%

D. 38%

70:

An additional cost that a green building project may have compared to a conventional project is:

A. Permit fees for plumbing

B. Consultant fees for green building experts

C. Increased prices for selecting a sustainable site

D. Added utility costs

71:

Regional priority credits are specific to:

A. LEED project type (schools, healthcare, data centers, etc.)

B. The state the project is located in

C. LEED credit category

D. LEED rating system family (BD+C, ID+C, etc.)

72:

Extracting and sourcing raw materials in a responsible manner is intended to avoid all of the following EXCEPT:

- A. Depletion of the ozone layer
- B. Infringement of indigenous people's rights
- C. Degradation of water sources
- D. Threats to rare and endangered species
- E. Deforestation

73:

What is different about green building design compared to conventional design?

- A. Green building costs more
- B. Green building does not have a bidding phase
- C. Green building uses an integrative process
- D. Green building has longer schedules

[Water Efficiency]

1:

What types of water should be used for irrigation?

(Choose 2)

- [ ] **A.** Blackwater
- [ ] **B.** Rainwater
- [ ] **C.** Potable water
- [ ] **D.** Graywater

2:

If a developer is looking for water efficient appliances to install in residences what label should they look for on the appliances?

- ○ **A.** Green-e
- ○ **B.** ENERGY STAR
- ○ **C.** LEED Certified
- ○ **D.** EPA Approved

3:

What strategies will not reduce the use of potable water for irrigation?

- ○ **A.** Using rainwater for irrigation

- B. Replacing permeable pavement with turf grass
- C. Using graywater for irrigation
- D. Installing native plants

4:

An owner is questioning the additional costs of submetering of a mixed-use project's water and energy systems. For what reason should the submeters be installed?

- A. Submetering is a Minimum Program Requirement
- B. Identifies disparities between how a project's water-based systems are designed to operate and how they actually perform
- C. LEED requires metering by subsystem of all energy and water based systems
- D. The integrative process does not work without submetering data

---

5:

The addition or increasing the use of graywater in a building can help with:

- A. Reducing potable water use in faucets
- B. Reducing rainwater harvesting
- C. Reducing runoff
- D. Reducing potable water used by urinals

6:

A restaurant is located on the second floor of a building. How can the project team decrease indoor water use demand?

- **A.** Place restrooms on the first floor of a building
- **B.** Use rainwater for toilet flushing
- **C.** Use graywater for washing dishes
- **D.** Install high efficiency toilets

7:

What is the EPAct of 1992 used for?

- **A.** To define ODP and GWP limits for refrigerants
- **B.** To determine the baseline building energy performance for buildings 20,000 sq. ft. or less
- **C.** To define the VOC content limits of certain building materials
- **D.** To set the baseline water flow requirements of toilets and fixtures

---

8:

What project design strategy would minimize a project's water usage the most?

- **A.** Minimize the quantity of hardscapes on the project site
- **B.** Directing runoff into retention ponds or bioswales

- C. Installing a landscape that needs no irrigation
- D. Increasing the area of permeable surfaces

9:

Which of the following are strategies for conserving potable water?

- A. Installing a dual flush toilet
- B. Increasing the infiltration of runoff
- C. Installing a bioretention pond
- D. Installing an onsite septic system

10:

Which of the following reduces outdoor water use while also improving the triple bottom line?

- A. Using permeable pavement for all parking spaces
- B. Replacing vegetated areas with impermeable pavement
- C. Installing a landscape that doesn't require a permanent irrigation system
- D. Using well-water for irrigation

11:

What types of water can NOT be used for flushing toilets?

- **A.** Rainwater
- **B.** Non-potable water
- **C.** Blackwater
- **D.** Graywater

12:

The installation of water submeters in a building will provide the facility manager with the ability to do each of the following EXCEPT:

- **A.** Track consumption
- **B.** Evaluate the quality of captured rainwater
- **C.** Determine fixture performance
- **D.** Pinpoint leaks

13:

What can help reduce indoor potable water use?

- **A.** Gravity-based irrigation system
- **B.** Smaller kitchen sinks
- **C.** Stacking the building design

- D. Composting toilets

14:

What type of plants do the most to help reduce water use for landscaping?

- A. Trees
- B. Native plants
- C. Annual flowers
- D. Turf grass

15:

In many buildings the most significant savings associated with water efficiency result from:

- A. Keeping contaminants at safe levels in reservoirs and aquifers
- B. Reduced development costs
- C. Reduced energy costs
- D. Reduced maintenance costs

16:

Which of the following does a facility operator need in order to optimize water consumption?

- A. Fixture cutsheets of waterless urinals

- **B.** The schedules of the occupants
- **C.** The operating times of the building
- **D.** Submetering of water-using systems

17:

Submeters are a strategy to reduce outdoor water use by:

- **A.** Billing tenants based on their portion of building occupancy
- **B.** Preventing irrigation runoff
- **C.** Providing weather-based irrigation control
- **D.** Providing water consumption tracking and leak identification

---

18:

What unit of measurement is used for toilets?

- **A.** Gallons per minute (liters per minute)
- **B.** FTE
- **C.** Wastewater efficiency
- **D.** Gallons per flush (liters per flush)

19:

What landscaping strategy will best eliminate the need for irrigation?

- A. Micro-irrigation
- B. Mulching
- C. Xeriscaping
- D. Drip irrigation

20:

What unit of measurement is used for a lavatory faucet?

- A. Gallons / liters per flush
- B. Gallons / liters per minute
- C. Design efficiency
- D. Process water rate

21:

Which of the following project designs would help with both rainwater management and outdoor water use reduction?

- A. Underground parking
- B. Vegetated roof
- C. Rainwater harvesting
- D. Submetering

22:

Which of the following is effective at reducing potable water use indoors?

- A. Installing submeters
- B. Installing fixtures that meet the EPAct 1992 standard
- C. Installing low-consumption flush fixtures and low-flow rate faucets
- D. Implementing cooling tower water management

23:

Potable water is defined as:

- A. Wastewater from bathroom sinks, laundry machines, kitchen sinks and dishwashers
- B. Untreated house-hold wastewater which has not come into contact with toilet waste or kitchen sinks
- C. Water that is not treated to drinking water standards and is not meant for human consumption
- D. Water that meets or exceeds EPA's drinking water standards

---

24:

What types of products should be selected for reducing indoor water use?

(Choose 2)

- [ ] A. ISO

- [ ] **B.** ENERGY STAR
- [ ] **C.** Green-e
- [ ] **D.** WaterSense

25:

Which of the following is the appropriate way to document whether a bathroom sink qualifies for an indoor water use reduction?

- ○ **A.** By submitting the total quantity of fixtures
- ○ **B.** By choosing the product manufacturer in LEED online
- ○ **C.** By fixture cut sheets
- ○ **D.** By occupancy calculations

26:

What type of water can NOT be used for irrigation purposes?

- ○ **A.** Laundry water
- ○ **B.** Blackwater
- ○ **C.** Rainwater
- ○ **D.** Potable water

27:

Indoor plumbing fixtures need to have which of the following labels for LEED?

- **A.** WaterSense
- **B.** Green-e
- **C.** Building Green
- **D.** LEED Certified

28:

If a project owner wants to create a landscape with plants that require watering, which of the following is the minimum outdoor water reduction from a baseline required for a new office project?

- **A.** 30%
- **B.** 20%
- **C.** 40%
- **D.** 10%

29:

What is an environmental benefit of using graywater for irrigation?

- **A.** Drip irrigation can be used
- **B.** Preserving aquifers
- **C.** Increased irrigation efficiency

- D. Reduced heat islands

30:

A rainwater harvesting system can help with:

(Choose 2)

- A. Improving site restoration
- B. Runoff management
- C. Reducing heat islands
- D. Reducing potable water use indoors

31:

Rain gardens, vegetated rooftops, and permeable pavements are strategies to manage rainwater and contribute to:

- A. More compact development
- B. Increased water efficiency
- C. Low impact development
- D. Increased potable water

32:

Harvesting rainwater can help with what project areas?

- A. Reducing runoff
- B. Reducing fertilization needs for the landscape
- C. Minimizing site hardscapes
- D. Minimizing impervious areas

33:

A project that reduces the amount of wastewater transported off site helps achieve which of the following?

(Choose 2)

- A. A reduction in energy required to treat wastewater
- B. A reduction in the demand for potable water
- C. A reduction in the demand for wastewater treatment infrastructure
- D. A reduction in the need for graywater used on site

34:

Which of the following are frequently considered types of blackwater?

(Choose 2)

- A. Water from kitchen sinks

- [ ] **B.** Process water for cooling towers
- [ ] **C.** Municipally reclaimed water
- [ ] **D.** Dishwasher water

35:

The baseline water use of a lavatory faucet is:

- ○ **A.** 2.2 gpm (8.3 lpm)
- ○ **B.** 1.0 gpm (3.8 lpm)
- ○ **C.** 2.2 gpf (8.3 lpf)
- ○ **D.** 1.0 gpf (3.8 lpf)

36:

Occupancy calculations may be needed for which of the following project documentations?

(Choose 2)

- [ ] **A.** Bicycle facilities
- [ ] **B.** Water metering
- [ ] **C.** Indoor water use
- [ ] **D.** Surrounding density

37:

In LEED which approach is taken in the Water Efficiency category to conserve water?

- **A.** Efficiency first
- **B.** Using alternative sources of water first
- **C.** Treating and reusing wastewater on site
- **D.** Using nonpotable water first

38:

Which of the following occupants would be classified as FTEs?

(Choose 2)

- **A.** A cleaning person who only works in the evenings
- **B.** A librarian
- **C.** A receptionist
- **D.** A delivery person

39:

What are the benefits of reducing potable water use in buildings?

(Choose 2)

- **A.** Reduced drawdown of water from water bodies and aquifers

- [ ] **B.** Decreased building operating costs
- [ ] **C.** Reduced contamination of nearby water bodies
- [ ] **D.** Increased irrigation efficiency

40:

During the integrative process, which of the following improvements in water efficiency would most likely need to be researched to confirm that they are legal to implement within the project?

- ○ **A.** Site conditions
- ○ **B.** Fixtures and fittings
- ○ **C.** Submetering
- ○ **D.** Alternative water sources

41:

What type of water is rainwater?

- ○ **A.** Potable water
- ○ **B.** Non-potable water
- ○ **C.** Blackwater
- ○ **D.** Graywater

42:

Which of the following is NOT a strategy for reducing potable water use for irrigation?

- A. Use treated wastewater
- B. Install building-level metering
- C. Install smart-sensor technology
- D. Only use grass for play fields or other activities that require turf

---

43:

For which of the following credit areas would a site plan be submitted for documentation?

- A. Furniture reuse
- B. Acoustic design
- C. Outdoor water use reduction
- D. Demand response

44:

An owner of a large 1970's apartment building wants to renovate the space to make it green. The cost of the replacing all of the porcelain plumbing fixtures is going to be cost-prohibitive for the owner. What can the project team suggest as an alternative to reduce potable water use?

(Choose 2)

- [ ] A. Install solar hot water heaters

- [ ] **B.** Install new flush valves
- [ ] **C.** Install ENERGY STAR ovens and refrigerators
- [ ] **D.** Install new low-flow aerators
- [ ] **E.** Install submeters

45:

What is a strategy for water efficient landscaping?

- ○ **A.** Create a pond on the property
- ○ **B.** Use potable water
- ○ **C.** Treat wastewater onsite
- ○ **D.** Use drip irrigation

46:

Which of the following occupants would be classified as an FTE?

- ○ **A.** A part-time salesman
- ○ **B.** A full-time cafeteria worker
- ○ **C.** A museum visitor
- ○ **D.** A full-time telecommuter

47:

Which of the following has the highest priority in LEED?

- A. Indoor water use reduction
- B. Outdoor water use reduction
- C. Cooling tower water use
- D. Submetering

48:

Designers and builders can construct green buildings that use significantly less water than conventional construction by performing which of the following actions?

(Choose 3)

- A. Decreasing the number of fixtures in a project
- B. Using graywater and/or rainwater for nonpotable water needs
- C. Installing water-efficient fixtures
- D. Incorporating native landscapes that eliminate the need for irrigation
- E. Installing water meters
- F. Reducing the site's runoff volume

49:

Water that is used for dishwashing, clothes washing, and ice making is considered what type of water?

- **A.** Recycled water
- **B.** Process water
- **C.** Blackwater
- **D.** Reclaimed water

50:

What minimum indoor water savings are LEED projects required to achieve?

- **A.** 0%
- **B.** 10%
- **C.** 15%
- **D.** 20%

51:

Which of the following would be considered graywater?

- **A.** Water from a dishwasher
- **B.** Recycled water from the city
- **C.** Air conditioning condensate

- D. Untreated laundry water

52:

WaterSense labels apply to what products?

(Choose 3)

- A. Toilets
- B. Irrigation submeters
- C. Private lavatory faucets
- D. Showerheads
- E. Washing machines

53:

What strategy to control and reduce runoff will hold water and reduce the rate of runoff?

- A. Reduce the size of the building footprint
- B. Direct runoff into dry ponds
- C. Increase the area of permeable surfaces
- D. Install pervious pavement

54:

Which of the following is considered potable water?

- **A.** Municipally recycled water used for landscape irrigation
- **B.** Harvested rainwater used for flushing toilets
- **C.** Water from a local well that meets EPA's drinking water quality standards that is used for lavatory faucets
- **D.** Wastewater from water closets

55:

The baseline water use of a urinal is:

- **A.** 2.2 gpf (8.3 lpf)
- **B.** 1.0 gpf (3.8 lpf)
- **C.** 1.0 gpm (3.8 lpm)
- **D.** 2.2 gpm (8.3 lpm)

56:

Which of the following is a type of graywater?

- **A.** Rainwater collected and held in a cistern
- **B.** Rainwater collected in a retention pond
- **C.** Wastewater that has not come in contact with toilet waste or kitchen sinks
- **D.** Wastewater from urinals

57:

Which of the following would a landscape architect use to measure the outdoor water use of a project?

- **A.** Local historic records
- **B.** IPC and UPC codes
- **C.** EPAct 1992
- **D.** EPA WaterSense Water Budget Tool

58:

Indoor water use reductions require projections based on which of the following:

- **A.** The cost of potable water
- **B.** Occupants' usage
- **C.** The gross area of the building
- **D.** The number of fixtures installed

59:

Which of the following are sources of graywater?

(Choose 2)

- [ ] **A.** Showers
- [ ] **B.** Toilets
- [ ] **C.** Municipal potable water supply systems
- [ ] **D.** Wells
- [ ] **E.** Washing machines

60:

To help with water use reduction in LEED, a lavatory faucet must use less water than the rates set by:

- ○ **A.** Clean Water Act
- ○ **B.** EPAct of 1992
- ○ **C.** WaterSense
- ○ **D.** Local code

61:

What can help reduce indoor potable water use?

- ○ **A.** Replacing fixtures with salvaged toilets manufactured in 1992

- **B.** Installing a green roof
- **C.** Installing a blackwater system
- **D.** Installing reduced-flow aerators on lavatory faucets

---

62:

What information would a project team need to successfully implement both rainwater management and outdoor water use reduction?

- **A.** Occupancy counts
- **B.** Location of indoor submeters
- **C.** Water balance
- **D.** Precipitation data

63:

The baseline water use of a toilet is:

- **A.** 1.6 gpf (6 lpf)
- **B.** 2.2 gpm (8.3 lpm)
- **C.** 1.6 gpm (6 lpm)
- **D.** 2.2 gpf (8.3 lpf)

64:

Who decides if water from showers can be used for irrigation?

- **A.** Project team
- **B.** Local authorities with jurisdiction in the area
- **C.** USGBC via the CIR process
- **D.** Universal plumbing code

65:

Which factor would increase outdoor water use?

- **A.** Using low-impact development (LID) strategies
- **B.** Installing submeters
- **C.** Using turf for groundcover
- **D.** Increasing planting density

[Energy & Atmosphere]

1:

What types of energy sources generate the least air and water pollution?

(Choose 2)

- [ ] **A.** Biofuel
- [ ] **B.** Clean coal
- [ ] **C.** Natural gas
- [ ] **D.** Wind
- [ ] **E.** Oil

2:

What environmental issue is associated with the burning of fossil fuels?

- ○ **A.** Release of carbon dioxide
- ○ **B.** Sedimentation of water supplies
- ○ **C.** Interference with migratory birds
- ○ **D.** Reduction of water from aquifers

3:

What year does the Montreal Protocol phase out HCFCs?

- **A.** 2030
- **B.** 2020
- **C.** 2015
- **D.** 1995

4:

What is lighting power density measured in?

- **A.** Footcandles per floor area
- **B.** Number of luminaires per unit area
- **C.** Installed lighting power per unit area
- **D.** The quantity of light trespass on adjacent sites, measured in watts

---

5:

Reduced emissions are a benefit of purchasing:

- **A.** Recycled water
- **B.** Materials with high SRI
- **C.** Certified wood

- **D.** Renewable Energy Credits (RECs)

6:

A building automation system will assist with collecting data about which of the following:

- **A.** Cleanliness of restrooms
- **B.** Maintenance schedule for replacing air filters
- **C.** Complaints from occupants about a loud fan noise in a conference room
- **D.** Energy spikes that occur every morning

7:

A refrigerated warehouse project in the design phase could reduce its electricity demand by taking which of the following actions?

- **A.** Enrolling in a demand response program
- **B.** Purchasing Renewable Energy Credits (RECs)
- **C.** Purchasing carbon offsets to counter GHG emissions
- **D.** Purchasing all electricity from a wind farm

8:

Which of the following would require use of the EPA's ENERGY STAR Portfolio Manager?

- **A.** Registering a large volume of LEED projects
- **B.** Bulk uploading project information into LEED online
- **C.** Calculating a building's minimum energy use
- **D.** Comparing the ongoing operating performance of a building with its intended design performance

---

9:

If a building owner enrolls in a demand response program, which of the following will happen?

- **A.** During off-peak times, the building's excess electricity may be sold back to the utility company.
- **B.** The owner will have to purchase carbon dioxide equivalents equal to the annual grid-generated electricity.
- **C.** The owner will have to purchase RECs equal to fifty percent of the building's yearly electricity use.
- **D.** The building may have to decrease electricity use during peak times.

10:

With regards to refrigerants what is a natural conflict between the prevention of ozone depletion and global warming?

- A. Refrigerants contain global warming gases
- B. Refrigerants contain ozone layer gases
- C. Refrigerants that deplete the ozone layer are less efficient
- D. Refrigerants that are neutral to the ozone layer are less efficient

---

11:

After a building is completed and occupied, how can energy demand be reduced?

- A. By conducting routine waste audits
- B. By opening and closing shades to control solar energy
- C. By encouraging occupants to stagger work hours
- D. By purchasing environmentally preferable cleaning supplies

---

12:

What has ozone depletion potential (ODP)?

- A. Runoff from the flooding of a construction site
- B. CFC-based refrigerants used in HVAC systems
- C. Paints with high VOCs
- D. Construction dust

13:

Which of the following is the median payback period for the commissioning of new buildings?

- **A.** 2.6 years
- **B.** 3.9 years
- **C.** 4.8 years
- **D.** 1.5 years

14:

Why is it important to categorize spaces in LEED?

- **A.** Smaller spaces have lower baseline requirements
- **B.** It helps with floor area calculations
- **C.** The types of spaces are used to determine building density
- **D.** Depending on the space categorization, the credit requirements may not apply

---

15:

A data center in a rural area wants to be net-zero. Which of the following design decisions will help the project team achieve this?

- **A.** Purchase carbon offsets
- **B.** Install a photovoltaic system on site
- **C.** Purchase Renewable Energy Credits (RECs)

- **D.** Provide all occupants with electric vehicles

16:

Developing nations banned ChloroFluoroCarbons (CFCs) under the:

- **A.** Executive Order 95-231
- **B.** EPA Clean Air Act
- **C.** Montreal Protocol
- **D.** Kyoto Treaty

17:

What is GWP as it relates to refrigerants?

- **A.** A measurement of how much effect the given refrigerant will have on global warming in relation to carbon dioxide.
- **B.** The potential for a single molecule of the refrigerant to destroy the ozone layer
- **C.** The speed at which an appliance loses its refrigerant
- **D.** The efficiency of a refrigerant

18:

What are the environmental benefits of cogeneration?

(Choose 2)

- [ ] **A.** Reduced erosion and sedimentation
- [ ] **B.** Recharging of aquifers
- [ ] **C.** Reduced air pollution
- [ ] **D.** Reduced greenhouse gas emissions
- [ ] **E.** Reduced wastewater generation

19:

When calculating building energy performance, what is included as process energy?

(Choose 3)

- [ ] **A.** Washing machine
- [ ] **B.** High efficient HVAC unit
- [ ] **C.** Walkway lighting
- [ ] **D.** Elevator
- [ ] **E.** Instant hot water heater
- [ ] **F.** Desktop computer

20:

On a project with an older existing HVAC&R system that uses CFCs, what can the project team do to earn LEED certification?

- A. Make a phase out plan for the removal of the CFC based refrigerants
- B. Eliminate all refrigerant leaks
- C. Recharge the equipment with CFCs
- D. Get a state exemption for the HVAC&R system

21:

What benefit does purchasing off-site renewable energy (Green Power) have?

- A. Off-site renewable energy costs less than off-site non-renewable energy
- B. The building design will be more efficient
- C. The building will avoid electricity blackouts
- D. Less emissions will be generated

22:

What are examples of spaces that are typically unoccupied?

(Choose 3)

- [ ] A. Gymnasium
- [ ] B. Mechanical room

- [ ] **C.** Private office
- [ ] **D.** Airplane hanger
- [ ] **E.** Data center floor area
- [ ] **F.** Inactive storage area in a warehouse

23:

A project owner wants to provide financial support to a reforestation project. What would help with this goal?

- ○ **A.** Carbon offsets
- ○ **B.** Green power
- ○ **C.** On-site renewable energy
- ○ **D.** Building in a high-priority site

24:

A project team is reviewing strategies to increase energy efficiency. Which of the following will help reduce plug-load demands?

- ○ **A.** Computer modeling
- ○ **B.** Efficient street lighting
- ○ **C.** Installing appliances that meet or exceed ENERGY STAR requirements

- D. High-performance glazing

25:

A building owner wants to increase energy efficiency to lower the operating costs of a new building project. What strategy would help with this goal?

- A. Provide daylighting
- B. Install a photovoltaic system on the roof
- C. Install triple-paned glass windows instead of double-paned glass windows
- D. Install all LED lighting

26:

Which of the following is not an alternative LEED recommends for reducing stratospheric ozone depletion?

- A. Using natural refrigerants
- B. Designing a building to use natural ventilation
- C. Selecting refrigerants that have a long atmospheric lifetimes
- D. Selecting refrigerants with lower Ozone Depltion Potential (ODP) and Global Warming Potential (GWP)

27:

What statement is true regarding HydroFluoroCarbons (HFCs)?

- A. The HFC refrigerant group includes NH3, CO2, and propane
- B. Many HFCs have a significant global warming potential
- C. HFCs have high ozone depletion potential
- D. HFCs are scheduled to be banned under the Montreal Protocol

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28:

Which of the following project areas would retrocommissioning aid?

- A. Identifying system problems prior to occupancy
- B. Advanced energy metering
- C. Operational energy efficiency
- D. Selecting environmentally preferable products

29:

Which of the following must occur to ensure energy-efficient design is carried through to efficient performance?

- A. Staff training
- B. Sixty day post occupancy review after the building is certified
- C. Yearly maintenance of all non-energy related systems

- **D.** Indoor air-quality monitoring

30:

A project is located in an area with a demand-response program and that has enough room for a wind-turbine to allow for on-site renewable energy. If the project implements both of these strategies, which of the following will occur?

- **A.** The project's energy costs will decrease
- **B.** The project's renewable energy production will decrease
- **C.** The project's energy demands will decrease
- **D.** The project's minimum energy performance will decrease

---

31:

Which of the following building components contribute to the plug load?

- **A.** Recessed lighting
- **B.** Elevators
- **C.** HVAC system
- **D.** Computers

32:

Which of the following actions should a project team take to make sure a building remains efficient during its operation?

- **A.** Ensure that the building systems are functioning as designed and that they support the owner's project requirements
- **B.** Run computer simulations to prioritize energy-efficiency opportunities
- **C.** Turn on all systems to their maximum output to confirm the building can handle the load
- **D.** Verify that no issues occur during a demand-response event

---

33:

What has a long atmospheric life that causes harm to the ozone layer?

- **A.** NH3
- **B.** CFCs
- **C.** HCFCs
- **D.** HCs

34:

What process uses heat recovery to capture heat from the process of generating electricity and then turns the recovered heat into thermal energy that can be used to heat a building?

- **A.** Commissioning
- **B.** Evapotranspiration
- **C.** Cogeneration
- **D.** Tertiary treatment

35:

Which of the following is a measure of energy use intensity?

- A. The efficiency of an HVAC system
- B. Energy consumed per unit of floor space
- C. The amount of electricity a photovoltaic system can produce
- D. Daylighting

36:

The owner of a historic renovation project wants to achieve carbon neutrality. Which of the following design decision will help the project team achieve this?

- A. Participating in a demand response program
- B. Purchasing Renewable Energy Credits (RECs)
- C. Using no more water than what falls on the site as precipitation
- D. Purchasing carbon offsets

37:

What variables measure a refrigerant's impact on the environment?

(Choose 2)

- A. Lifecycle potential

- [ ] **B.** Global warming period
- [ ] **C.** Global warming potential
- [ ] **D.** Greenhouse gas lifetime
- [ ] **E.** Ozone depletion potential

38:

An owner for a new three-story office space wants to know how the building compares to other buildings of similar function. Which of the following can be used to compare the performance of the building?

- ○ **A.** Local tax records
- ○ **B.** EPA's ENERGY STAR Portfolio Manager
- ○ **C.** LEED Online
- ○ **D.** Commissioning reports

39:

Which of the following project team members is responsible for verifying and documenting that a building and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's project requirements?

- ○ **A.** The LEED project reviewer
- ○ **B.** The commissioning authority
- ○ **C.** The project administrator

- **D.** The mechanical engineer

40:

What environmental issue is associated with refrigerants used in HVAC&R systems?

- **A.** Increased CO2 indoors
- **B.** Soil contamination
- **C.** Increasing greenhouse gas emissions
- **D.** Groundwater contamination

41:

What does a REC represent?

- **A.** The amount of energy purchased from a Green-e supplier
- **B.** The quantity of fossil fuels avoided by purchasing renewable energy, expressed in tons
- **C.** The environmental, social, and other positive attributes of power generated by renewable resources
- **D.** The amount of energy an electricity provider purchases from renewable sources

---

42:

Commissioning of a building is intended to verify the building and its systems meet which of the following:

- **A.** The owner's project requirements

- B. HVAC specifications
- C. Occupant preferences
- D. Local building code

43:

A developer is building a medical park that will have ten buildings for doctors' offices. Which of the following is a strategy for achieving energy efficiency?

- A. Purchasing carbon offsets
- B. Installing a community solar garden
- C. Siting the buildings close to each other
- D. Building a district heating and cooling system

44:

Which projects would NOT be eligible for LEED certification?

(Choose 2)

- A. An existing building project that phases out the use of CFC-based refrigerants no later than 5 years after the project is completed
- B. A new building project that uses CFC-based refrigerants
- C. A new building project that uses hydrocarbons (HCs) as refrigerants
- D. A new building project that uses no refrigerants
- E. An existing building project that uses CFC-based refrigerants without having a CFC

phase-out plan

45:

To qualify for LEED, carbon offsets must be which of the following?

- A. Green-e Climate certified (or equivalent)
- B. Purchased and used within the same state or locale.
- C. ENERGY STAR labeled
- D. Green-e Energy certified (or equivalent)

46:

A home owner in a sunny climate has decided to lease a photovoltaic system instead of purchase one. Which of the following about that choice is true?

- A. Leasing the system would offset a large up-front cost.
- B. Leasing the system would increase the home's energy efficiency.
- C. Leasing the system would allow the owner to participate in a demand response program.
- D. Leasing the system would decrease the home's electricity demand.

47:

What minimum contract length is required for an owner to purchase renewable energy certificates (RECs) for LEED credit?

- A. 1 year
- B. 5 years
- C. 3 years
- D. 10 years

48:

Which of the following is a difference between Renewable Energy Credits (RECs) and a carbon offset?

- A. RECs are tradable commodities
- B. RECs are purchased
- C. RECs encourage the reduction of GHG emissions
- D. RECs must be purchased locally

49:

A school building consumes electricity from the grid at night while contributing energy back to the grid during the day from on-site solar panels, resulting in the school having no electricity costs. This is an example of:

- A. Zero waste
- B. Water balance
- C. Carbon neutrality
- D. Net-zero energy

50:

A building owner wants to reduce energy demand to lower the heating and cooling costs of a new building project. What strategy would help with this goal?

- **A.** Adding more windows to the envelope
- **B.** Increase the size of the building
- **C.** Optimize the building orientation
- **D.** Purchase Renewable Energy Credits (RECs)

51:

Which of the following has the greatest direct impact on global warming?

- **A.** Building orientation
- **B.** HVAC operating efficiency
- **C.** SRI of a building's roof
- **D.** Size of a project's impermeable areas

52:

What project areas would you find CFCs used in?

(Choose 2)

- [ ] **A.** Refrigeration
- [ ] **B.** Hot water heating
- [ ] **C.** Centrifugal chillers
- [ ] **D.** Radiant flooring

53:

A developer is considering pursuing LEED for an eight-story, multi-family residential project. How would the baseline building performance be determined?

- ○ **A.** By obtaining an ENERGY STAR for Homes rating
- ○ **B.** By calculations made using ASHRAE 90.1
- ○ **C.** By using the EPA's ENERGY STAR Portfolio Manager
- ○ **D.** By the project obtaining a HERS index

54:

Which of the following refrigerants are banned under the Montreal Protocol?

(Choose 2)

- [ ] **A.** Isopentane
- [ ] **B.** HFCs
- [ ] **C.** HCFCs
- [ ] **D.** CFCs

55:

What helps utilities optimize their supply-side energy generation and delivery systems?

- A. Building submetering
- B. Customers that enroll in a demand response program
- C. Building owners that purchase carbon offsets
- D. Daylighting automation systems

56:

What is the most common way to meet the requirements of off-site renewable energy?

- A. Purchasing Renewable Energy Credits (RECs)
- B. Directly purchasing green power from local utility companies
- C. Obtaining energy from a geothermal system
- D. Installing a rooftop photovoltaic array

57:

One way to reduce a building's energy load is to do which of the following?

- A. Site the building far away from adjacent buildings

- **B.** Configure the building to minimize solar gain in summer and maximize it in winter
- **C.** Increase the size of the building
- **D.** Reduce a building's thermal mass

58:

What environmental issue is associated with refrigerants used in HVAC&R systems?

- **A.** Increased use of fossil fuels
- **B.** Damage to the Earth's ozone layer
- **C.** Increased air pollution
- **D.** Pollution of water bodies

59:

A demand response (DR) event is triggered by the ____.

- **A.** Facility manager
- **B.** Building owner
- **C.** Utility company
- **D.** Building occupants

60:

What is the median payback period for the commissioning of existing buildings?

- A. 0.7 years
- B. 1.5 years
- C. 2.8 years
- D. 1 year

61:

Which of the following is a benefit of commissioning?

- A. Fewer system deficiencies
- B. Reduced operational training
- C. Reduced construction schedules
- D. Decreased project costs

62:

A project owner that chooses to use onsite renewable energy sources instead of oil, coal, and natural gas gets what economic benefit of the triple bottom line?

- A. Decreasing destructive extraction processes
- B. Protection from uncertain supplies
- C. Avoiding escalating market prices
- D. Contributing to national security vulnerability

63:

An owner wants to offset the environmental impact of a building's energy use. What is a benefit of purchasing off-site renewable energy or renewable energy certificates (RECs) over installing onsite renewable energy systems such as photovoltaic panels?

- **A.** RECs can be shared across multiple LEED projects
- **B.** RECs only have to be purchased one-time to offset the building's lifetime energy use
- **C.** The upfront costs to the building owner would be lower
- **D.** Off-site renewable energy and RECs are less expensive than grid-source non-renewable energy

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64:

What statement is true regarding ChloroFluoroCarbons (CFCs) and HydroChloroFluoroCarbons (HCFCs)?

- **A.** CFCs are being phased-out under the Montreal Protocol while HCFCs are banned under the Montreal Protocol
- **B.** The ozone depletion potential (ODP) of HCFCs and CFCs is about the same
- **C.** LEED encourages replacing CFC or halon-based fire suppression systems with HCFCs
- **D.** CFCs have a greater global warming potential (GWP) than HCFCs

---

65:

Which of the following is reduced with the help of carbon offsets?

- A. Water contamination
- B. Ozone
- C. Greenhouse gas emissions
- D. CFCs

66:

Which of the following is NOT an example of on-site generated renewable energy?

- A. Biofuel-based electrical system
- B. Wind
- C. Solar
- D. Renewable Energy Credits (RECs)

67:

Which of the following are types of individual occupant spaces?

(Choose 3)

- A. Open-office workstation

- [ ] **B.** Hospital exam room
- [ ] **C.** Auto service bay
- [ ] **D.** Study carrel
- [ ] **E.** Hotel front desk
- [ ] **F.** Hotel guest room

68:

What does a carbon offset represent?

- ○ **A.** A tradable commodity representing proof that a unit of electricity was generated from a renewable resource
- ○ **B.** The primary measure of energy consumption associated with buildings
- ○ **C.** The energy consumption divided by the number of square feet in a building
- ○ **D.** A unit of carbon dioxide equivalent that is reduced, avoided, or sequestered to compensate for emissions occurring elsewhere.

69:

An owner wants to install a photovoltaic system on the building's rooftop and sell the excess electricity back to the utility company. Which of the following would be aided by this strategy?

- ○ **A.** On-site renewable energy
- ○ **B.** Carbon offsets
- ○ **C.** Demand response

- D. Green power

70:

Increasing the thermal mass of a building and installing a photovoltaic system would help with:

- A. Increasing energy efficiency and increasing renewable energy
- B. Reducing energy demand and increasing energy efficiency
- C. Decreasing energy efficiency and increasing renewable energy
- D. Reducing energy demand and increasing renewable energy

71:

During a LEED project when does commissioning take place?

- A. Discovery phase
- B. Pre-design phase
- C. Schematic design phase
- D. Substantial completion phase

72:

Once occupants are in a building, how can the project team maintain ongoing energy efficiency?

(Choose 2)

- A. By monitoring building automation systems

- [ ] **B.** By retrocommissioning
- [ ] **C.** By comparing the performance against ENERGY STAR Portfolio Manager
- [ ] **D.** By purchasing Renewable Energy Credits (RECs)

73:

Which of the following is a benefit of a building owner choosing to install a wind turbine on site to reduce the building's use of grid-source nonrenewable energy?

- ○ **A.** Heat island reduction
- ○ **B.** Lower liabilities
- ○ **C.** Decreased up-front building costs
- ○ **D.** Reduced greenhouse gas emissions

74:

Which of the following causes depletion of the ozone layer?

- ○ **A.** CFCs
- ○ **B.** CO_2
- ○ **C.** Ammonia
- ○ **D.** Propane

75:

What LEED credits reward projects for improving operational energy performance?

(Choose 2)

- [ ] **A.** Green power and carbon offsets
- [ ] **B.** Commissioning
- [ ] **C.** Demand response
- [ ] **D.** Energy metering

76:

Energy efficiency is defined as:

- ○ **A.** Any strategy that reduces resource use 10% or more from a baseline comparison
- ○ **B.** The replacement of any older building product with a newer building product
- ○ **C.** The use of technology that requires less energy to perform the same function as a conventional item
- ○ **D.** Any strategy that reduces resource use 20% from a baseline comparison

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77:

An existing office building has a 20-year old chiller that uses CFC-11. An owner is considering a major renovation of the building and applying for LEED for New Construction certification. What statement is true about the project's ability to earn LEED certification?

- **A.** The owner will not be able to achieve a Platinum level certification
- **B.** The owner can leave the existing system in place as-is
- **C.** The owner can implement a phase-out plan to earn LEED certification
- **D.** The owner must replace the chiller to earn LEED certification

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78:

Regularly occupied spaces would include which of the following:

- **A.** Restroom
- **B.** Break room
- **C.** Corridor
- **D.** Dorm room

79:

Approximately 50% of chillers in existing buildings use what refrigerant?

- **A.** NH3
- **B.** CFC-11
- **C.** HFC-23
- **D.** HCFC-22

80:

What statement is true regarding HydroChloroFluoroCarbons (HCFCs)?

- A. HCFCs are a type of natural refrigerant
- B. HCFCs are refrigerants banned by the Montreal Protocol
- C. LEED requires zero use of HCFCs
- D. HCFCs have a low ozone depletion potential compared to CFCs

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81:

A building owner of a new extended-stay hotel is concerned about the higher initial costs for ENERGY STAR appliances. Which of the following could help with the decision-making process?

- A. Reviewing the building's energy use for ways to improve efficiency
- B. Using computer modeling to prioritize the owner's project requirements
- C. A life cycle assessment of the trade-offs between the capital and operating costs
- D. Showing the GHG emissions that would be reduced

82:

In commercial buildings, on average which end use consumes the most energy?

- A. Ventilation
- B. Lighting

- C. Cooling
- D. Space heating

83:

Using passive strategies such as daylighting is an example of which of the following:

- A. Energy performance management
- B. Increasing energy efficiency
- C. Renewable energy practice
- D. Reducing energy demand

84:

Which refrigerants are considered environmentally benign?

(Choose 2)

- A. Halons
- B. Hydrocarbons
- C. Propane
- D. HydroFluoroCarbons

[Materials & Resources]

1:

The manufacturer of a foam ceiling acoustic tile has disclosed the ingredients in the product. With this information project teams will be able to do which of the following?

- **A.** Make better-informed decisions
- **B.** Evaluate the greenhouse gas emissions of the product
- **C.** Determine if the product is locally sourced
- **D.** Select less expensive products

2:

How can an architect make sure that the general contractor understands what products to include in a project?

- **A.** Include the specifications in the purchasing policy
- **B.** Tell the contractor during the LEED charrette
- **C.** Select the materials to use in LEED online
- **D.** Send the contractor an email

3:

When choosing products that have Environmental Product Declarations (EPD), which factor is used in determining if LEED credit can be earned?

- **A.** The number of different permanently installed products used from different manufacturers

- B. The cost of the qualifying products as a percentage of the total building envelope material's cost
- C. The cost of the qualifying products as a percentage of the total project cost
- D. The number of different permanent and temporary products used from one manufacturer

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4:

A large home builder is developing a new neighborhood with 200 homes. What strategies would help the builder save on material costs and conserve materials?

(Choose 3)

- A. Select products that ship with less packaging
- B. Structural insulated panels
- C. Reducing hallways
- D. Low VOC paints
- E. Choose products made in factories that support worker health
- F. Advanced framing

5:

Which greenhouse gas is produced in landfills as a result of solid waste disposal?

- A. Methane
- B. NH3

- C. Radon
- D. CO_2

6:

Some wood flooring recovered from a local barn demolition is being used for flooring in a new office project. What type of material is the wood flooring considered?

- A. Recycled content
- B. Reused material
- C. Virgin resource
- D. Recycled and refurbished material

7:

A material that has met which of the following standards would contribute to material ingredient optimization?

(Choose 2)

- A. Health Product Declaration
- B. GreenScreen
- C. Cradle-to-Cradle Certified
- D. Global Reporting Initiative

8:

For what purpose would a project team do a life-cycle assessment?

- A. To measure the VOC content between different paints
- B. To calculate a project's indoor baseline water use
- C. To compare the raw materials of different products
- D. To understand the trade-offs of material selection and energy performance

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9:

What do the credits in the Materials and Resources (MR) category focus on?

- A. Helping project teams select materials that have the most environmental benefits at the least cost
- B. Selecting materials that are more energy efficient than traditional building materials
- C. Minimizing the embodied impacts associated with the entire life-cycle of building materials
- D. Reducing the quantity of materials used on a project

10:

Which of the following are the environmental benefits of reusing a building?

(Choose 2)

- A. Reduces demands on virgin resources

- [ ] **B.** Increases water efficiency
- [ ] **C.** Makes landfills last longer
- [ ] **D.** Preserves a site's historical, cultural, and aesthetic values
- [ ] **E.** Reduces CFCs

11:

A project has construction debris that is nonrecyclable waste. Which of the following actions can the project team take with the waste that will help the project with construction waste management?

- ○ **A.** Exclude it from the credit calculations
- ○ **B.** Waste-to-energy
- ○ **C.** Bury it on site
- ○ **D.** Send it to a landfill

12:

A door found onsite and turned into a table as part of a major renovation would be considered what type of material?

- ○ **A.** Renewable material
- ○ **B.** Reused
- ○ **C.** Commingled material
- ○ **D.** Recycled material

13:

Which of the following would help with sustainable purchasing during building operations?

- A. Purchasing recycled printer paper
- B. Purchasing cafeteria food from a nearby distribution center
- C. Ordering toner cartridges online
- D. Removing any ENERGY STAR qualified vending machines

14:

A construction waste management plan should address what items?

- A. A target diversion rate and what materials should be diverted from the waste stream
- B. The disposal of hazardous materials and corporate sustainability reporting
- C. A community recycling program and source reduction
- D. Where onsite waste can be incinerated and where certified wood can be procured

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15:

The purchasing policies for the ongoing operations of a building should address which of the following?

(Choose 2)

- [ ] A. Pest control service
- [ ] B. Designing for flexibility

- [ ] **C.** Ongoing consumables
- [ ] **D.** Utility rates
- [ ] **E.** Renewable Energy Credits (RECs)
- [ ] **F.** Durable goods

16:

An environmental product declaration (EPD) for LEED must conform to which of the following standards?

- ○ **A.** ASHRAE
- ○ **B.** Green-e
- ○ **C.** Local code or jurisdiction
- ○ **D.** ISO

17:

Which of the following materials, if reused, would be considered pre-consumer recycled content?

(Choose 3)

- [ ] **A.** Sawdust
- [ ] **B.** Construction and demolition debris
- [ ] **C.** Walnut shells
- [ ] **D.** Sunflower seed hulls

- [ ] **E.** Milk jugs

18:

Which of the following actions are aided by completing a life-cycle assessment (LCA) of a building during the design process?

(Choose 2)

- [ ] **A.** Reducing the amount of materials used
- [ ] **B.** Decreasing the project costs
- [ ] **C.** Determining the materials that best fit the project over the building's life
- [ ] **D.** Shortening the construction schedule
- [ ] **E.** Reducing change orders

19:

Which of the following legally binding documents describe the quality of the materials to be used on the project?

- ○ **A.** Environmental Product Declaration (EPD)
- ○ **B.** Specifications
- ○ **C.** Cradle-to-Grave Analysis
- ○ **D.** Health Product Declaration (HPD)

20:

A floor covering that can be recycled into a new product at the end of its useful life would be what type of product?

- A. Passive
- B. Renewable
- C. Cradle to cradle
- D. Cradle to grave

21:

An environmentally conscience tenant wants to select flooring that is environmentally preferable in an effort to plan ahead for when the tenant will eventually move to a larger office space. Which of the following flooring products meet the criteria?

(Choose 2)

- A. Ceramic tile that a manufacturer takes back after its end of life and recycles
- B. Wood flooring that a manufacturer takes back after its end of life and refinishes
- C. Carpet that a manufacturer takes back after its end of life and burns
- D. Linoleum tile that a manufacturer takes back after its end of life and sends to the landfill

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22:

Which of the following is an example of a source control waste reduction strategy?

- **A.** Pre-ordering materials cut to size
- **B.** Using commingled recycling
- **C.** Installing recycling bins onsite
- **D.** Reusing salvaged materials onsite

23:

How can a project team learn about the environmental impacts of a manufacturer's extraction operations and the product's supply chain?

- **A.** By analyzing the product's health product declaration (HPD)
- **B.** By reviewing the manufacturer's corporate sustainability report (CSR)
- **C.** By checking if the company is a USGBC member
- **D.** By conducting a life-cycle assessment of the product

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24:

Which of the following is one of the most toxic and common sources of indoor air pollution in an existing building?

- **A.** CFCs
- **B.** Mercury

- **C.** VOCs
- **D.** Radon

25:

Selecting products that have been developed with a sustainable design is an example of:

- **A.** Recycling
- **B.** Source reduction
- **C.** Waste diversion
- **D.** Reuse

26:

What is greenwashing?

- **A.** Building green buildings in an industrial area
- **B.** The implementation of a green cleaning custodial policy
- **C.** Advertising a product or policy to be more environmentally friendly than it really is
- **D.** Changing local zoning codes to be greener

27:

Which of the following is NOT a strategy to reduce construction waste?

- A. Sell unused materials
- B. Use salvaged materials
- C. Recycle materials
- D. Maximize the building footprint

28:

What is true regarding carpet made from recycled milk jugs?

(Choose 2)

- A. The carpet is more durable than conventional carpets
- B. The carpet contains post-consumer recycled content
- C. The carpet has lower life cycle costs than conventional carpets
- D. The material would reduce the need for virgin materials

29:

Which of the following strategies should a hospital project choose to extend the life of the building and conserve building resources as the surrounding population grows?

- A. Select low-emitting materials
- B. Design rooms with modular systems
- C. Site the building in a dense area
- D. Purchase additional land on which to construct additional buildings

30:

The choice of a building material used for a project should be determined by what criteria?

(Choose 3)

- [ ] **A.** How long the material has been used in other projects
- [ ] **B.** If the company is a USGBC member
- [ ] **C.** The cost of the material
- [ ] **D.** The size of the company supplying the materials
- [ ] **E.** The impact the material has on society
- [ ] **F.** The environmental impact of extracting and manufacturing the material

---

31:

A product with a Health Product Declaration (HPD) will assist the project team in selecting products that meet which of the following criteria:

- ○ **A.** Are more durable
- ○ **B.** Are verified to have been responsibly sourced
- ○ **C.** Have less negative health effects
- ○ **D.** Can be recycled

32:

What are the environmental benefits of using salvaged wood flooring in a residential project?

- A. The wood flooring will increase the tax base of the local economy
- B. The wood flooring will have a lower cost since it did not have to be extracted from a forest
- C. The wood flooring will reduce the demand for virgin resources
- D. The wood flooring will have a lower installation cost

33:

A manufacturer has a carpet tile that includes an environmental product declaration (EPD) and health product declaration (HPD). The manufacturer has also published a corporate sustainability report (CSR). Which of the following do these documents aid?

- A. Material design optimization
- B. Improving the community
- C. Transparency
- D. Reducing product costs

34:

When reviewing products in the integrative design, which of the following are preferable material attributes that should be considered?

(Choose 2)

- [ ] **A.** Durability
- [ ] **B.** Supporting the local economy
- [ ] **C.** Being assembled in factories that pay below average wages
- [ ] **D.** Being created in the same or neighboring countries

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35:

REACH Optimization would be used in which of the following credit categories?

- ○ **A.** Indoor Environmental Quality
- ○ **B.** Materials and Resources
- ○ **C.** Location and Transportation
- ○ **D.** Energy and Atmosphere

36:

Which of the following materials can be certified under the Forest Stewardship Council (FSC)?

(Choose 3)

- [ ] **A.** Linoleum floor tiles
- [ ] **B.** Wheatboard desks
- [ ] **C.** Bamboo floors
- [ ] **D.** Hardwood cabinets
- [ ] **E.** Leather furniture

☐ **F.** Softwood moulding

37:

What should be included in a construction waste management plan?

○ **A.** Which existing building materials – if any – will be reused

○ **B.** The distance products were purchased from the construction site

○ **C.** If any construction waste materials to be recycled will be commingled or separated

○ **D.** New technologies and materials that will help reduce waste

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38:

A wood product is environmentally preferable if it has which of the following attributes?

○ **A.** Wood that is sustainably grown and harvested

○ **B.** Wood that does not rot from the treatment of carcinogenic chemicals

○ **C.** Wood harvested from an unmanaged forest

○ **D.** Wood harvested from the land of an indigenous tribe

39:

When selecting windows for a building project, along with performance and adaptability, what else should the project team consider?

○ **A.** Reusing old windows

- B. Leverage points in the windows
- C. The social context of the windows
- D. Embodied energy of the windows

40:

Which of the following are strategies that help a project team design for flexibility?

(Choose 3)

- A. Demountable partitions
- B. Modular casework
- C. Operable windows
- D. Occupancy sensors
- E. Moveable furniture
- F. Underground parking

41:

Which of the following exemplify strategies of reducing harm to the environment over a building's entire life?

(Choose 3)

- A. Tearing down a building and putting up a more energy-efficient one in its place
- B. Conducting a life-cycle assessment to help reduce a building's environmental footprint

- [ ] **C.** Developing a new building on prime farmland
- [ ] **D.** Restoring a historic building
- [ ] **E.** Using salvaged flooring in a new building

42:

A project team for a school project is designing classrooms that will improve the learning experience. Which of the following building components meet this goal while maintaining preferable life-cycle impacts?

- ○ **A.** Reused acoustic tiles
- ○ **B.** Refurbished desks that contain recycled content
- ○ **C.** Single-pane glazing
- ○ **D.** New polyester carpet tiles

43:

For new construction projects, which of the following tools enable the project team to understand the environmental impact of a building over its entire life?

- ○ **A.** Cradle-to grave life cycle analysis (LCA)
- ○ **B.** ENERGY STAR rating
- ○ **C.** EPA ENERGY STAR Portfolio Manager
- ○ **D.** LEED Online

44:

A tenant is reviewing cabinets for an office kitchen. One option is wheatboard cabinets sourced from different areas and compressed together with glue. A second option is solid oak cabinets extracted and manufactured locally. How can the environmental attributes of the products be compared?

- **A.** By an air-quality sample
- **B.** By the product's MSDS
- **C.** By a life-cycle assessment
- **D.** By a review of the manufacturer's corporate sustainability policy

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45:

What is an example of adaptive reuse?

- **A.** Renovating an old steel mill into an apartment complex
- **B.** Renovating a historic home
- **C.** Designing classrooms so they can be divided into separate class spaces
- **D.** Designing a building with a flexible floor plan that can accommodate offices or apartments

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46:

What document does the project team create for the administrative and procedural requirements for salvaging, recycling, and disposing of non-hazardous demolition and construction waste?

- A. Construction waste management plan
- B. Owners Project Requirements (OPR)
- C. Building commissioning plan
- D. Building recycling plan

47:

Which project layout would be the best for reducing demand for new materials?

- A. A dense, mixed-use neighborhood
- B. A multi-building office project with single-story buildings
- C. An outdoor shopping mall built on a greenfield
- D. Single-home residences in a suburban area

48:

In an existing office building, how can the project team determine if there are additional opportunities for increasing the amount of waste diverted from ongoing operations?

- A. Survey the building occupants
- B. Conduct a waste-stream audit
- C. Review the monthly waste-haul receipts
- D. Count the number of recycling bins

49:

The project owner of an office park wants to make sure that once a tenant leaves, the tenant space can be quickly and easily renovated. How would the project team meet this goal?

- A. By finding contractors who are willing to work on weekends
- B. By designing for flexibility
- C. By selecting a waste hauler that has enough hauling capacity
- D. By selecting materials that are sized appropriately

50:

What is FSC Certified wood?

- A. Wood that has been procured from well managed forests
- B. Composite wood that contains post-consumer recycled wood, usually from construction and demolition debris
- C. Wood that has been sourced (extracted, manufactured, purchased) within 100 miles (160 km) of the project site
- D. Composite wood that does not contain any urea formaldehyde

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51:

How can projects reduce sending waste to a landfill?

(Choose 2)

- [ ] **A.** Recycle materials
- [ ] **B.** Reuse materials
- [ ] **C.** Use materials with low lifecycle costs
- [ ] **D.** Use local materials

52:

For solid waste management, which of the following ranks the highest by the EPA to reduce waste?

- ○ **A.** Reuse
- ○ **B.** Waste to energy
- ○ **C.** Source reduction
- ○ **D.** Recycling

53:

Which of the following does LEED use as a standard means of reporting the environmental impacts of a product, such as global warming potential and greenhouse gas emissions?

- ○ **A.** Carbon management tool
- ○ **B.** Environmental Product Declarations
- ○ **C.** MSDS
- ○ **D.** Greenhouse Gas Inventory

54:

In which of the following ways would a project use environmental product declarations (EPDs)?

- A. To identify products that contain hazardous chemicals
- B. To find certified green building products
- C. To select product's that have met a minimum standard of energy efficiency
- D. To help the project team understand a product's sustainable qualities

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55:

A project team is reviewing potential building materials for a school project. What impact would reusing brick and stone found off-site have on the triple bottom line?

(Choose 2)

- A. The reuse would decrease energy performance.
- B. The reuse would be sustainable.
- C. The reuse would be cost-effective.
- D. The reuse would reduce peak energy demands.
- E. The reuse would take away local jobs.

56:

Which of the following purchasing decisions would reduce the environmental harm used in the operations of a school project?

- A. High VOC carpets and carpet pads, low VOC furniture, green cleaning products
- B. High VOC paints, low SRI roofing materials, metal furniture
- C. Paper towels that are FSC certified, cafeteria food from a local farm, ENERGY STAR computers
- D. Power adapters, new textbooks made from new-growth wood pulp, trash cans

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57:

A laboratory project requires a lot of special-use equipment and systems to keep the areas inside sterile. What would a sub-contractor need to safely handle a product during installation?

- A. The quantity of recycled content in a product
- B. A Health product disclosure (HPD)
- C. A Material safety data sheet (MSDS)
- D. MERV 13 filters

58:

Which of the following are effective ways to lessen the overall environmental consequences of an interior space over its lifetime?

(Choose 2)

- A. Installing 1.6 gpf (6 lpf) toilets

- [ ] **B.** Choosing products that have a published Environmental Product Declaration (EPD)
- [ ] **C.** Installing demountable interior nonstructural walls
- [ ] **D.** Selecting refurbished furniture
- [ ] **E.** Selecting a site located 1 mile (1,600 meters) from public transportation

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59:

Which of the following reduce the energy use and waste associated with the demolition and construction of buildings?

(Choose 3)

- [ ] **A.** Restoring existing buildings
- [ ] **B.** Designing buildings with single-pane glazing for daylighting
- [ ] **C.** Preserving historic structures
- [ ] **D.** Rehabilitating blighted buildings
- [ ] **E.** Incinerating construction waste from a demolition

[Indoor Environmental Quality]

1:

The practice of placing windows or other transparent media and reflective surfaces in such a way that during the day natural light provides effective internal illumination is referred to as:

- A. Passive ventilation
- B. Daylighting
- C. Natural ventilation
- D. Lighting power density

2:

Designing a building with a natural ventilation system will impact what credit categories?

(Choose 2)

- A. Materials and Resources
- B. Indoor Environmental Quality
- C. Sustainable Sites
- D. Energy and Atmosphere

3:

Which of the following should a green cleaning policy include?

- A. The replacement of Minimum Efficiency Reporting Value (MERV) filters and the selection of low VOC materials, furniture, and finishes

- **B.** Measures to prevent against unwanted pests and the amount of waste to divert from the waste stream
- **C.** Standards for selecting products and technologies and certification of cleaning equipment
- **D.** A waste stream audit of recyclable materials and instructions for calibrating indoor air quality sensors

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4:

Which type of products would reduce the environmental effects of cleaning products?

- **A.** Environmental Choice
- **B.** Green Label Plus
- **C.** CRI
- **D.** Green-e

5:

Why should a building have a green cleaning policy?

- **A.** To decrease the time it takes to clean a building
- **B.** To provide the janitorial staff with an opportunity to be part of the integrative design
- **C.** To reduce the costs of cleaning a building
- **D.** To reduce the environmental effects of cleaning products

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6:

A delivery of drywall arrived at a building site during a rain storm. Some of the drywall was exposed to the rain. What should the general contractor do with the material?

- **A.** Wait for it to dry out and then install it
- **B.** Send it to the landfill
- **C.** Install it anyway
- **D.** Ask for replacement drywall from the seller

7:

A project administrator needs specific information on an interior paint used in a tenant space. The information on the VOCs in the paint need to be uploaded into LEED Online. Where would this information be found?

- **A.** USGBC materials database
- **B.** Local building code office
- **C.** LEED Online materials database
- **D.** MSDS

8:

To improve occupant satisfaction a project team conducts a survey of the occupants. Which of the following are important IEQ topics to ask about in the survey?

(Choose 3)

- [ ] **A.** Are the bicycle racks conveniently located?
- [ ] **B.** Is the lighting adequate?
- [ ] **C.** How are the acoustics?
- [ ] **D.** Are any areas are too hot or too cold?
- [ ] **E.** How frequently does an individual take public transportation to work?

9:

Where should smoking be prohibited for a project?

(Choose 3)

- [ ] **A.** Walking trails
- [ ] **B.** Garages
- [ ] **C.** Building entrances
- [ ] **D.** Operable windows
- [ ] **E.** Air intakes

10:

When would a project team need to consider increasing the ventilation levels to improve indoor air quality?

- ○ **A.** After the occupants have moved in
- ○ **B.** Before the occupants move in

C. Pre-design

D. During building commissioning

11:

During the integrative process a building owner decides to replace a low VOC ten-year carpet tile with a less expensive and higher VOC twelve-year carpet tile. Which of the following would be impacted by this change?

A. Raw material sourcing

B. Construction waste management

C. Material reuse

D. Indoor air quality

12:

A healthcare project team in the pre-design phase is discussing ways to protect patient privacy. Which of the following strategies would help achieve this goal?

A. Reducing the building's footprint

B. Placing recovery rooms toward the core of the building

C. Using sound isolation

D. Designing waiting areas with views to the outdoors

13:

Which strategy supports improved indoor air quality during operations and maintenance?

- **A.** Flushing out the building before occupancy
- **B.** Outlining green cleaning procedures and goals for custodians
- **C.** Locating air intakes away from garage areas
- **D.** Using building materials with low life-cycle impacts

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14:

One side of a building is oriented toward the afternoon sun. Which of the following can give occupants control over excessive brightness and glare?

- **A.** Individual task lighting
- **B.** Operable windows
- **C.** Thermal comfort controls
- **D.** Adjustable window shades

15:

An owner has selected an office building site in a natural area. They want to provide views to the outside while also using daylighting to reduce energy demand. Which strategy would achieve these goals?

- **A.** Installing cubicles with low partitions and placing conference rooms and offices in the core of the building

- B. Installing an under floor air distribution system
- C. Locating conference rooms and offices near the glazing
- D. Having adjustable window shades and operable windows

16:

A building in a warm climate will not have operable windows or natural ventilation due to a limited number of days each year that these strategies would be beneficial. Which of the following would help the project team give ventilation control to occupants?

- A. Movable furniture
- B. Adjustable air diffusers
- C. Window blinds
- D. Adjustable height partitions

17:

A building owner and general contractor are creating a construction plan to improve the air quality during the construction process. What should the plan address?

- A. Keep dust and dirt out of the building, protect materials from moisture damage, flush-out the building before occupancy
- B. Use low VOC materials, monitor carbon dioxide, monitor outdoor airflow
- C. Increase ventilation, calibrate sensors and monitors, conduct an occupant survey
- D. Conduct custodial training, use fans to blow out construction dust, orient the building properly

18:

Which factors affect an occupant's thermal comfort?

- **A.** Temperature, humidity, and air movement
- **B.** VOC levels, glare, and acoustics
- **C.** Acoustics, ergonomics, and views
- **D.** Daylighting, air monitoring, and cleanliness

19:

An effective thermal comfort strategy considers the six primary factors that affect thermal comfort. A close collaboration between the owner, architect, and who else is critical to achieving thermal comfort success?

- **A.** Engineer
- **B.** Lighting designer
- **C.** Building code inspectors
- **D.** Landscape designer

20:

A project team member is discussing adding soft surfaces to an exterior building room. What would be the result of doing this?

- **A.** Reduced glare

- B. Improved acoustics
- C. Reduced contaminants
- D. Improved daylighting

21:

The developer of a new restaurant wants to include a smoking room inside. Which of the following statements is true about the project's ability to earn LEED certification?

- A. The project could get an exception for ETS control.
- B. The project could earn LEED certification if appropriate signage is put up designating the smoking area.
- C. The project is exempt from ETS control.
- D. The project cannot earn LEED certification because it will not meet all the prerequisites.

22:

A business owner wants to have an open office plan in a tenant space. To increase daylighting and optimize views, which of the following should the plan include?

(Choose 2)

- A. Vision panels
- B. Low partitions
- C. Single-pane glazing
- D. Solid doors

- [ ] **E.** Task lighting

23:

Proper ventilation systems remove which of the following contaminants?

(Choose 3)

- [ ] **A.** Material off-gassing
- [ ] **B.** CFCs
- [ ] **C.** CO2 concentrations
- [ ] **D.** Phosphorus
- [ ] **E.** Radon

24:

What product for an entryway system allows for good indoor air quality and is a good material choice?

- ○ **A.** Low VOC rubber mat
- ○ **B.** Carpeted tile shipped from overseas
- ○ **C.** Wood flooring made in another country
- ○ **D.** Stone tiles extracted and manufactured locally

25:

Which design strategy allows occupants to actively participate in energy savings?

- A. Smoking away from the building
- B. Daylighting
- C. Views to the outdoors
- D. Task lighting

26:

How can a project team in a hot climate reduce a building's energy use and increase daylighting?

- A. By siting the building in an area surrounded by other buildings that can provide shade
- B. By installing appropriately sized and located windows
- C. By locating private offices along the perimeter of the building walls
- D. By installing glass over the entire exterior of the building

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27:

Which of the following elements should be considered to facilitate communication in school classrooms?

(Choose 3)

- [ ] A. Soft surfaces
- [ ] B. Air filters with high MERV ratings

- [ ] **C.** Duct insulation
- [ ] **D.** Increased ventilation
- [ ] **E.** Building geometry

28:

Which of the following preventive maintenance tasks would a facility manager routinely perform to maintain indoor air quality?

(Choose 2)

- [ ] **A.** Replacing air filters
- [ ] **B.** Conducting a flush-out
- [ ] **C.** Dusting all blinds with electrostatic cloths
- [ ] **D.** Calibrating sensors

29:

A project team is beginning the integrative process late into the design-phase of a new office building. At this point, which of the following could still be changed and would be a low-cost solution for improving daylighting?

(Choose 2)

- [ ] **A.** The types of furnishings
- [ ] **B.** The colors of the surfaces
- [ ] **C.** The number of glazing panes

- [ ] **D.** The orientation of the building
- [ ] **E.** The window configuration

30:

When determining the ventilation levels of a space needed for good indoor air quality, which of the following should the project team consider?

(Choose 2)

- [ ] **A.** The activities performed in the space
- [ ] **B.** The time of day the space will be used
- [ ] **C.** The space's proximity to the exterior building envelope
- [ ] **D.** The number of occupants in the space

31:

What are the best design strategies for improving indoor air quality during operations and maintenance of a building?

(Choose 2)

- [ ] **A.** Increase the ventilation in the building
- [ ] **B.** Use natural refrigerants
- [ ] **C.** Orient the building for optimal sun exposure
- [ ] **D.** Use soft surfaces on the interiors
- [ ] **E.** Use air filters with high Minimum Efficiency Reporting Value (MERV) ratings

32:

A company is designing an open office plan for seventy-five employees working in an entire floor of a building. Daylighting will be used to provide natural light and reduce energy costs. To ensure effective lighting quality for all of the occupants, the design should include which of the following?

- **A.** Zoned daylighting controls
- **B.** Automatic shades
- **C.** Light shelves
- **D.** Reflective paint and surfaces

33:

A building owner has concerns about the costs of increasing the ventilation from the minimum required for indoor air quality. Which of the following could help offset the operating costs?

- **A.** Implementing a green-cleaning program
- **B.** Using demand control ventilation
- **C.** Specifying low-emitting materials
- **D.** Installing higher rated MERV filters

34:

A project design with a focus on creating a healthy building includes materials with low VOC emissions, grates used in the entryway, higher-rated MERV filters, and air intakes located in an open-air parking garage. Which of these design strategies negatively impacts good indoor-air quality?

- A. The location of the air intakes
- B. The higher-rated MERV filters
- C. The grates used for the entryway
- D. The materials with low VOC emissions

35:

In which of the following ways does integrated pest management (IPM) help a building owner save money?

(Choose 2)

- A. Because only appropriate chemicals are used
- B. Because over application can be avoided
- C. Because pests are never present on the site
- D. Because only beneficial insects that contribute to a healthy ecosystem are allowed to thrive on the site.

36:

The developer of a school project in a sunny region suggests using light shelves to bring daylight into some of the classrooms. Which of the following issues would arise as a result of this this strategy?

- A. Decreased acoustic performance
- B. Reduction of low-emitting materials

- C. Interference with outside views
- D. Glare

37:

A tenant of an office space wants an open office layout. What is one trade-off of this decision?

- A. Daylighting will be harder to achieve.
- B. The room will have decreased air quality.
- C. The acoustics may be poor.
- D. The space will not be able to include task lighting.

38:

For which of the following reasons is it important to conduct occupant surveys?

- A. Surveys reduce the ongoing waste stream.
- B. Surveys are a Minimum Program Requirement.
- C. Surveys are required for ongoing commissioning.
- D. Surveys identify areas that need improvement.

39:

A government project with an open office plan will have partitioned cubes with frosted glass above eye level position for privacy. This design choice would negatively impact which of the following

elements?

- A. Individual thermal comfort
- B. Views to the outside
- C. CO2 monitoring
- D. Individual occupant controls

40:

Which responsibilities would belong to the general contractor during construction to improve indoor air quality?

(Choose 2)

- A. Verifying construction waste is placed in the proper trash bins
- B. Making sure someone is sweeping periodically to control dust
- C. Overseeing the rainwater management plan
- D. Capping the ducts to mechanical systems
- E. Implementing a pest control management plan

41:

For which of the following reasons is it important to provide individual lighting and thermal comfort controls to building occupants?

- A. Occupant controls help improve indoor air quality

- **B.** Occupant controls help improve acoustics
- **C.** Occupant controls help increase ventilation
- **D.** Occupant controls help improve productivity

42:

When thinking about room layouts early in the design process, which of the following should be considered?

- **A.** Using materials with recycled content
- **B.** Entryway systems
- **C.** Acoustics
- **D.** Environmental tobacco smoke control

43:

In a naturally ventilated building, which of the following would provide occupants with control over their temperature?

- **A.** Operable windows
- **B.** CO2 sensors
- **C.** Outdoor air monitors
- **D.** A single-office thermostat

44:

In order for an occupant survey to improve the triple bottom line of a project, what should occur after the survey results have been assessed?

- A. The building systems manual should be updated to include the survey results.
- B. The survey results should be shared with USGBC.
- C. The survey results should be uploaded to LEED online.
- D. Corrective action should be taken to address any problems.

45:

Why would a project team use low-emitting materials?

- A. These materials allow more daylight into the core of a building.
- B. These materials provide soft surfaces to improve acoustics.
- C. These materials reduce the glare from interior finishes.
- D. These materials protect the health of construction personnel and building occupants.

46:

A project owner wants to create a healthy work environment for employees. To help ensure indoor air quality, which of the following should be monitored?

(Choose 2)

- A. Carbon-dioxide levels

- [ ] **B.** Daylighting levels
- [ ] **C.** Submetering of the HVAC system
- [ ] **D.** Outdoor airflow
- [ ] **E.** Wind speed and direction

47:

A project team is trying to maximize the number of points they can achieve for their LEED project by identifying synergies. Which elements, when combined, would best achieve this goal?

(Choose 3)

- [ ] **A.** Occupant lighting controls
- [ ] **B.** Occupancy sensors
- [ ] **C.** CO2 sensors
- [ ] **D.** Daylight sensors
- [ ] **E.** Operable windows

48:

What amount of time do people in the United States spend on average indoors?

- ○ **A.** 70%
- ○ **B.** 60%
- ○ **C.** 90%

- **D.** 80%
- **E.** 50%

49:

A business owner is building an office in a city that has air quality issues during the summer. The owner wants to hear recommendations for design decisions that improve indoor air quality. Which of the following are strategies that would achieve the project goal?

(Choose 2)

- **A.** Permit smoking around side entrances only
- **B.** Use materials with low VOC emissions
- **C.** Use natural ventilation
- **D.** Install walk-off mats in the entryways
- **E.** Orient the building east to west

50:

A developer for an office project is considering a natural ventilation system. Which of the following will be the MOST important in determining if the system will be appropriate?

- **A.** Whether or not the system can be submetered
- **B.** Whether or not the system is quiet
- **C.** Whether or not the system can provide enough fresh air
- **D.** Whether or not the system can connect to a building automation system

51:

Including task lighting and increasing ventilation levels in a new building has what effect on the triple bottom line?

- A. Decreased ozone depletion
- B. Decreased maintenance
- C. Increased occupant performance
- D. Lower first costs

52:

Properly designed daylighting results in which of the following?

- A. A decreased need for artificial lighting
- B. A decreased need for glare control
- C. The need to add operable windows
- D. An increased lighting power density

53:

A building owner wants to have improved IAQ after construction to improve occupant health. Which of the following products would a project team need to verify have low-VOCs?

(Choose 3)

- A. Granite countertops

- [ ] **B.** Computer workstations
- [ ] **C.** Acoustic insulation
- [ ] **D.** Ceiling paint
- [ ] **E.** No smoking signs located outside the building

54:

At which point during the project schedule would a flush-out occur?

- ○ **A.** Prior to the building water being turned on
- ○ **B.** Prior to occupants moving in
- ○ **C.** After the building envelope is weather-tight
- ○ **D.** After HVAC ducts have been sealed and protected

55:

What can a project team do to reduce the need for pesticides?

- ○ **A.** Do not permit smoking around building entrances
- ○ **B.** Install hardscapes around the entire building perimeter
- ○ **C.** Use only native plants in the landscaping
- ○ **D.** Develop a coordinated program of nonchemical strategies

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56:

Which of the following would help increase the daylight brought into a space?

- **A.** Ergonomic furniture, reused acoustic ceiling tiles, polished concrete flooring, and movable partitions
- **B.** Low VOC interior walls, single-pane glazing, and reused furniture
- **C.** Task lighting, occupancy sensors, window blinds, and operable windows
- **D.** Clerestory windows, light shelves, reflective paint, and skylights

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57:

Changing the building envelope from single-pane glazing to double-pane glazing would result in which of the following?

- **A.** Increased daylighting
- **B.** Improved occupant controls
- **C.** Increased energy efficiency
- **D.** Decreased energy demand

58:

A project team in a dry region is designing a project with an entryway that leads to a downtown city block. The building owner wants to reduce dirt, dust, and contaminants tracked into the building from people's shoes. Which of the following would be appropriate choices for an entryway system that would improve indoor air quality?

(Choose 3)

- [ ] **A.** Recycled wood flooring
- [ ] **B.** Marble tile extracted and manufactured locally
- [ ] **C.** Rubber mats manufactured overseas
- [ ] **D.** Steel grates
- [ ] **E.** Metal grills made of aluminum

59:

When conducting a confidential occupant survey to rate the lighting, acoustics, temperature, and cleanliness of a building, who is primarily responsible for reviewing the results and taking any corrective action?

- ○ **A.** The architect(s)
- ○ **B.** The building owner(s)
- ○ **C.** The occupant(s)
- ○ **D.** The facility manager(s)

60:

A building design in a cool climate includes daylighting, natural ventilation, operable windows, and individual lighting controls. What else can be included in the design to improve occupant comfort and control?

- ○ **A.** Bicycle racks near the building entrance
- ○ **B.** Ergonomic desks

- C. Walk off mats in all emergency exits
- D. Discounted transit passes

61:

Which of the following does LEED require for good indoor air quality?

- A. That low-emitting materials are specified
- B. That smoking indoors is prohibited
- C. That the building is kept clean during construction
- D. That a green cleaning policy is implemented